2014-1179

IN THE UNITED STATES COURT OF APPEALS

FOR THE FEDERAL CIRCUIT

TECH SHELL, INC,

Appellant,

v.

INCASE DESIGNS, INC.

Appellee

Appeal from the Patent Trial and Appeal Board in Reexamination No. 95/001,767

BRIEF OF APPELLANT – TECH SHELL, INC.

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February 21, 2014

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

TECH SHELL, INC. V. INCASE DESIGNS, INC

2014-1179

CERTIFICATE OF INTEREST

Pursuant to Federal Circuit Rules 28(a)(1) and 47.4, counsel for Appellant certify the following:

1. The full name of every party or amicus represented by us is:

   Techshell, Inc.

2. The name of the real party in interest (if the part named in the caption is not the real party in interest) represented by us is:

   Not applicable

3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of any party represented by use are:

   Not applicable

4. The names of all law firms and the partners or associates that appeared for the parties now represented by us in the trial court or are expected to appear in this court are:

   Scott A. Horstemeyer, Thomas | Horstemeyer, LLP
   N. Andrew Crain, Thomas | Horstemeyer, LLP
   Daniel Gresham, Thomas | Horstemeyer, LLP

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Park	U.S. Patent No. 6,405,881 issued June 18, 2002	7

STATEMENT OF RELATED CASES

Pursuant to Federal Circuit Rule 47.5, Appellant submits that there have been no previous appeals in this case. Appellant further submits that the present case is related to pending *inter partes* reexamination of U.S. Patent No. 7,643,274 ("the '274 Patent") issued on January 5, 2010 with Control No. 95/001,766. The reexamination of the '274 Patent is currently pending a decision before the Patent and Trial Appeal Board. United States Patent No. 7,907,400 ("the '400 Patent") which is the subject of this case is a continuation of, and claims priority the '274 Patent.

In addition, the '400 Patent and the '274 Patent are currently the subject of litigation involving patent infringement claims against Incipio Technologies, Inc., 3:13-cv-00626-MCR-CJK, Techshell Inc. v. Incipio Technologies (N.D. Florida). A complaint was filed by Appellant on December 11, 2013. Appellant notes that settlement discussions were active at the time of filing this Brief.

STATEMENT OF JURISDICTION

The Patent Trial and Appeal Board ("the Board") had jurisdiction of the matter in accordance to 35 U.S.C. §§134(b) and 315, which apply to *inter partes* review of a patent. The Board affirmed the rejections by the Examiner following an *inter partes* reexamination of the '400 Patent. The United States Court of Appeals for the Federal Circuit now has appellate jurisdiction of this matter pursuant to 28 U.S.C. §1295(a)(4)(A) and 35 U.S.C. §141(b), which apply to any final decision of the Board.

STATEMENT OF THE ISSUES

1. Whether the Board erred in finding that *Alexander*[1] discloses a second elastic planer element of an exterior cover of a laptop computer that is separate and independent from a first elastic planar element of the exterior cover of the laptop computer.

2. Whether the Board erred in finding that *Genest*[2] discloses the tab(s) as disclosed in the '400 Patent.

3. Whether the Board erred in finding that the Examiner provided sufficient rationale for combining *Alexander* and *Genest* to disclose the subject matter of the '400 Patent.

[1] U.S. Patent No. 5,835,344 (issued Nov. 10, 1998).

[2] U.S. Patent No. 6,480,377 B2 (issued Nov. 12, 2002).

STATEMENT OF THE CASE

This is an appeal of a final decision of the Board affirming the Examiner's rejections from an *inter partes* reexamination of the '400 Patent. The '400 Patent was issued on March 15, 2011, and is assigned to the Appellant, Tech Shell, Inc. ("the Patent Owner"). On September 16, 2011, Incase Designs Corp., ("the Third Party Requestor") filed a Request for *Inter Partes* Reexamination ("the Request") with the United States Patent and Trademark Office ("PTO") alleging substantial new questions of patentability regarding claims 1-53 of the '400 Patent. A23-A31. On December 13, 2011, the PTO granted the request for *inter partes* reexamination, and the Examiner issued a first Office Action ("Office Action") rejecting claims 1, 2, 4-8 and 26-29 of the '400 patent as obvious under 35 U.S.C. §103 over *Alexander* in view of *Genest* and rejecting claim 3 as obvious under 35 U.S.C. §103 over *Alexander, Genest*, and *Park*[3]. A32-A34. Claims 9-25 and 40-53 of the '400 Patent were not subject to reexamination. A32. On June 14, 2012 the Examiner issued an Action Closing Prosecution ("ACP") maintaining the rejections of claims 1-8 and 26-39. The Patent Owner appealed to the Board on January 3, 2013. A34-A41. The Board issued a decision on September 13, 2013 ("the Decision") affirming the Examiner's rejections of claims 1-8 and 26-39 of the '400 patent. A15. This appeal was timely filed on November 13, 2013.

[3] U.S. Patent 6,405,881 (issued June 18, 2002).

STATEMENT OF THE FACTS

I. The '400 Patent

The '400 Patent issued with fifty-three claims on March 15, 2011, and is assigned to the Patent Owner.

The '400 Patent describes an "exterior cover for laptop computers, wherein the exterior cover comprises one separate piece for applying to the outside surface of the display portion of the laptop computer and a second separate piece for applying to the outside surface of the keyboard portion of the laptop computer." A48 at col. 3, ll. 55-60. The '400 Patent further describes tabs on each of the separate pieces "that are pushed into place around the laptop by applying manual pressure, ... allowing for easy and fast application and removal." A48 at col. 3, ll. 63-65. Independent claims 1 and 39 and dependent claims 2-8 and 26-28 are at issue in this case and are directed towards an exterior cover for a laptop computer. Exemplary claim 1 recites:

> 1. An exterior cover for a laptop computer having a display portion and a keyboard portion, comprising:
>
> a first elastic planar element for placement on an outside surface of the display portion, the first elastic planar element including:
>
> a raised edge along a portion of a perimeter of the first elastic planar element, wherein the raised edge extends perpendicularly from the first elastic planar element and toward the display portion; and
>
> a plurality of tabs located on the raised edge, wherein each tab extends from the raised edge over an inside

surface of the display portion so as to grip the display portion; and

a second elastic planar element for placement on an outside surface of the keyboard portion, the second elastic planar element being separate and independent from the first elastic planar element, the second elastic planar element including:

a raised edge along a portion of a perimeter of the second elastic planar element, wherein the raised edge extends perpendicularly from the second elastic planar element and toward the keyboard portion; and

a plurality of tabs located on the raised edge, wherein each tab extends from the raised edge over an inside surface of the keyboard portion so as to grip the keyboard portion.

As recited in claim 1, the exterior cover for the laptop computer comprises a first elastic planar element and a second elastic planar element. Claim 1 specifically states that "the second elastic planar element ... [is] separate and independent from the first elastic planar element." A51 at col. 10, ll. 20-22. In addition, the first elastic planar element is for placement around the outside edge of the display portion and includes tabs that grip the display portion. A51 at col. 10, ll. 15-18. Likewise, the second elastic planar element is for placement around the outside edge of the keyboard portion and includes tabs that grip the keyboard portion. A51 at col. 10, ll. 28-31.

On September 16, 2011, the Third Party Requestor, filed the Request requesting reexamination of claims 1-53 of the '400 Patent and alleged that various references raised substantial new question of patentability. A23, A26.

II. The Examiner's Rejections

On December 13, 2011, the Examiner granted the request for reexamination with respect to claims 1-8 and 26-39. A33. During the reexamination of the '400 Patent, the Examiner rejected claims 1, 2, 4-8, and 26-39 as allegedly being obvious under 35 U.S.C. §103(a) over *Alexander* in view of *Genest*. A33. The Examiner also rejected claim 3 as allegedly being obvious under 35 U.S.C. §103(a) over *Alexander* in view of *Genest*, and further in view of *Park*. A33. Claims 9-25 and 40-43 were not subject to reexamination. A32.

In the Office Action, the Examiner adopted the reasoning from the Request alleging that independent claims 1 and 39 were unpatentable under 35 U.S.C. §103 (a) over *Alexander* in view of *Genest*. A33.

Specifically, the Examiner and the Third Party Requestor alleged that Figure 3 of *Alexander* discloses the "separate and independent" feature of claim 1. A27, A33. The *Alexander* reference relates to "a portable computer system including "a ***transport or carrying case***, in which the housing of the computer system is fitted." A60 at col. 1, ll. 60-64. The *Alexander* states that the "case protects the portable computer against damage." A54. Figure 3 of *Alexander* is reproduced below:

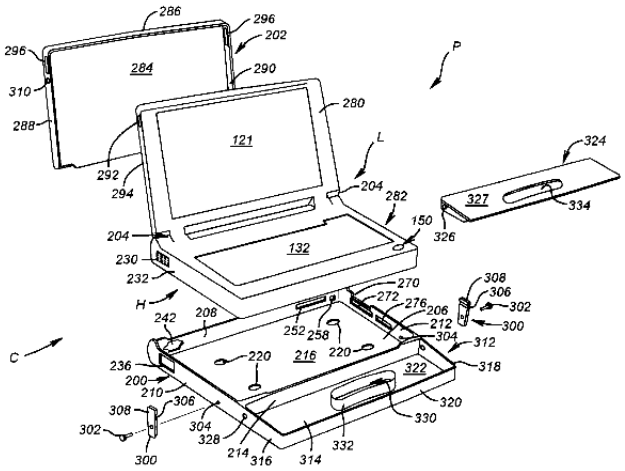

FIG. 3

Figure 3 illustrates an expanded assembly view of the laptop case of *Alexander*. A60. *Alexander* states that "[i]n the drawings, the letter P designates generally a portable computer system according to the present invention, including a housing H (FIG. 3) containing a laptop computer L and an integral carrying ***case*** C (FIG. 1) ***into which the housing H is engagingly fitted***." A60 at col. 2, ll. 52-56. *Alexander* states that "[t]he case C of the portable computer system P includes a lower case body 200 and a case cover 202 which is movably mounted to the case body 200 at a connector mechanism which is a part of the case C of the laptop computer L." A62 at col. 5, ll. 38-41.

The Request stated that "*Alexander* discloses a laptop protective case that has a display portion (*i.e.*, "case cover 202") and a keyboard portion (i.e., "lower case body 200")." A27. In response to the Patent Owner's statement that the case of *Alexander* is a one piece case, the Examiner, by adopting the Third Party

Requestor's reasoning, alleged that Figure 3 of *Alexander* "shows the case C as comprising two separate and independent portions." A39-A40.

Additionally, in rejecting claim 1, the Examiner adopted reasoning of the Request which stated that "*Alexander* does not ... disclose the use of a plurality of tabs on the raised edges to hold the cover to the laptop." A27. To overcome this deficiency, the Request stated that "*Genest* discloses a protective case for a handheld computer that uses tabs (44) that extend over the interior surface of the device to hold the cover to the computer." A29.

The Request further stated that "it would have been obvious to a person of ordinary skill in the art at the time the invention was made to add the tabs described in *Genest* to the raised edges of the protective cover in *Alexander* ... so that the protective cover can be more securely attached to the laptop." A31. The Examiner adopted this reasoning. A33.

III. The Board's Decision

On September 13, 2013, the Board affirmed the Examiner's rejections of claims 1-8 and 26-39. A8. With respect to the separate and independent feature of claim 1, the Board relied on Figure 3 of *Alexander* to conclude that the lower case body 200 and the case cover 202 of *Alexander* are separate and independent. A11. Additionally, although *Alexander* states that "[t]he case C of the portable computer

system P includes a lower case body 200 and a case cover 202 which is movably mounted to the case body 200 at a connector mechanism which is a part of the case C of the laptop computer L," the Board determined that this sentence of *Alexander* included a typographical error which would have been obvious to one of ordinary skill of the art. A8. The Board further stated that "*Alexander* and Figure 3 disclose pivoted connectors 204 of the laptop L as functioning to movably open and close the case body 200 and the case cover 202 of the carrying case C." A11.

Accordingly, the Board concluded that "the case body 200 and the case cover 202 are 'separate and independent' as well as 'unconnected' from each other." A7.

The Board further agreed with the Examiner that *Genest* disclosed the tabs of the first elastic planar element and the second elastic planar element as recited in claim 1. Specifically, in response to the Patent Owner's position that the tabs in *Genest* are stationary protrusions and do not deform or move with the case, the Board stated that "the Patent Owner argues limitations not present in the claims." A12.

The Board further stated that that the Examiner's adoption of the rationale for combining *Alexander* and *Genest* as stated in the Request was sufficient to support the conclusion of obviousness. A14.

With respect to claim 39, the Board stated that the arguments presented by the Patent Owner were unpersuasive for the same reasons as claim 1. A15. In addition, the Board affirmed the rejections of dependent claims 2-8 and 26-38 as ultimately depending from independent claim 1 or 39. A14-A15.

On November 13, 2013, the Patent Owner filed a timely Notice of Appeal.

SUMMARY OF THE ARGUMENT

The Board's affirmation of the Examiner's rejections of claims 1-8 and 26-39 should be reversed because *Alexander* in view of *Genest* fails to disclose, teach, or suggest each and every one of the elements of claims 1-8 and 26-39 as required by 35 U.S.C. §103 (a). Specifically, *Alexander* fails to disclose, teach, or suggest at least the feature of "a second planar element being separate and independent from a first elastic planar element," as recited in independent claims 1 and 39. A17, A21. In addition, *Genest* fails to disclose, teach, or suggest at least features of the "plurality of tabs" as recited in claim 1 and "tab" as recited in claim 39. A17, A21.

With respect to the "separate and independent" feature of independent claims 1 and 39, the Board incorrectly relied on Figure 3 of *Alexander*, illustrating an expanded view of the system of *Alexander*, as disclosing that the lower case body 200 and the case cover 202 of *Alexander* are separate and independent. In addition, the Board incorrectly concluded that claim 1 of *Alexander* does not preclude the case cover from being separate and independent from the lower case body. Further, the Board incorrectly interpreted *Alexander* as including a typographical error. The interpretation by the Board is factually wrong in light specification and claims and nonsensical in view of the purpose of *Alexander*.

Next, the Board incorrectly concluded that *Genest* cures the deficiencies of *Alexander* with respect to the tab features of independent claims 1 and 39. The Board incorrectly agreed with the Examiner that, although claim 1 specifically cites that the first and second elastic planar elements each include a plurality of tabs, that the Patent Owner read in limitations of the claims by submitting that the tabs in *Genest* do not disclose the tabs of claims 1 and 39 for at least the reason that the tabs in *Genest* do not deform or move with the body of the case. The elastic nature of the planar elements allows the tabs to move with the body of the case for entry of the electronic device.

Finally, the Board incorrectly concluded that the rationale for combining the tabs of *Genest* with the carrying case of *Alexander* was sufficient for finding the exterior cover of the laptop computer as obvious.

In conclusion, claims 1 and 39 are patentable over *Alexander* in view of *Genest*. In addition, claims 2-8 and 26-38 are patentable over *Alexander* in view of *Genest* for at least the reason that they depend from claims 1 or 39. Further, claim 3 is patentable over *Alexander* in view of *Genest* and further in view of *Park* for at least the reason that claim 3 depends from claim 1.

ARGUMENT

I. Standard of Review

The Board affirmed the Examiner's rejections of the '400 Patent as being unpatentable under 35 U.S.C. §103(a). The determination of obviousness under 35 U.S.C. §103 is a "legal conclusion based on underlying findings of fact." *In re Kotzab*, 217 F.3d 1365, 1369 (Fed. Cir. 2000). Accordingly, the standard of review for a decision involving obviousness under 35 U.S.C. §103(a) is *de novo*. *Id.*

II. The Board Erred in Affirming the Examiner's Rejection of Claims 1, 2, 4-8, and 26-39 as Being Unpatentable Over *Alexander* in View of *Genest*.

In order to establish a *prima facie* case of obviousness under 35 U.S.C. §103, each and every element of a claim must be described or suggested by the prior art or obvious in view of the prior art. *See In re Fine*, 837 F.2d 1071, 1073-1074 (Fed. Cir. 1988); *Ex Parte Wada and Murphy*, Appeal 2007-3733 (Bd. Pat. App. & Inter. 2008); *See also, KSR Int'l v. Teleflex, Inc.*, 550 U.S. 398, 411 (2007) (claim deemed obvious to one of ordinary skill where all claim elements were disclosed in the cited prior art references). In addition, "[r]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to

support the legal conclusion of obviousness." *KSR Int'l* at 418 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

The Board affirmed the findings by the Examiner that claims 1, 2, 4-8, and 26-39 were unpatentable over *Alexander* in view of *Genest*. With respect to independent claims 1 and 39, the Board erred in ruling that *Alexander* discloses a second elastic planar element being separate and independent from a first elastic planar element. The Board further erred in ruling that *Genest* discloses a plurality of tabs included on the first elastic planar element so as to grip the display portion of the laptop computer and a plurality of tabs included on the second elastic planar element so as to grip the keyboard portion of the laptop computer. Finally, the Board erred in ruling that it would be obvious to one skilled in the art to combine the teachings of *Alexander* to *Genest* to disclose the teachings of independent claims 1 and 39. Accordingly, claims 1 and 39 are patentable over *Alexander* and *Genest*. In addition, dependent claims 2, 4-8, and 26-38 are patentable for at least the reason that claims 2, 4-8, and 26-38 depend from independent claims 1 and 39.

A. *Alexander* fails to disclose, teach, or suggest a second planar element of an exterior cover of a laptop case that is separate and independent from a first planar element of the exterior cover.

The Board affirmed the Examiner's rejection of independent claims 1 and 39 under 35 U.S.C. 103(a) as being unpatentable over *Alexander* in view of *Genest*.

Specifically, the Board ruled that *Alexander* discloses the element of "a second elastic planar element being separate and independent from a first elastic planar element," as recited in both claim 1 and claim 39. A11. Representative claim 1 recites:

> 1. An exterior cover for a laptop computer having a display portion and a keyboard portion, comprising:
>
> a first elastic planar element for placement on an outside surface of the display portion, the first elastic planar element including:
>
> ...
>
> a second elastic planar element for placement on an outside surface of the keyboard portion, ***the second elastic planar element being separate and independent from the first elastic planar element***, the second elastic planar element including:
>
> .....

(*emphasis added*). The Patent Owner notes that while claim 1 and claim 39 differ in scope, claim 1 and claim 39 each recite the element of "a second elastic planer element being separate and independent from a first elastic planar element." Accordingly, claim 1 and claim 39 are patentable for at least the reason that *Alexander* fails to disclose, teach, or suggest at least this element as discussed below.

Alexander relates to "a new and improved portable computer system with ***an integral computer carrying case***." A60 at col. 1, ll. 54-56. *Alexander* states that the "computer system … includes ***a transport or carrying case*** in which the ***housing of the computer is fitted***." A60 at col. 1, ll. 60-62. In addition, *Alexander*

states that "the housing H is fittingly ***received*** and firmly ***held in place in the case once inserted***." A62 at col. 5, ll. 64-65. *Alexander* states that the "portable computer system of the present invention with its integral carrying case ***protects the computer system from damage***." A60 at col. 2, ll. 13-15.

Accordingly, *Alexander* discloses a ***one-piece*** form fitting ***protective briefcase*** for a laptop computer. Figure 3 of *Alexander* represents an assembly view of the case, and illustrates that the case is assembled with nine different individual parts (*i.e.*, a lower case body, a case cover, two connector clasps, two connector pins, a handle compartment cover, and two hinges). *Alexander* further discloses two *connection* methods, *i.e.*, hinges and clips, to ***join the top and bottom sections of the laptop case***.

To begin, the Patent Owner submits that the protective ***case*** disclosed by *Alexander* is **not** a "two-piece laptop computer ***cover***," as concluded by the Board. A7-A11. In fact, the term "case" is commonly defined as "an often small or portable container ***for enclosing something***, as for carrying or safekeeping." *See* http://dictionary.reference.com/browse/case?s=t (emphasis added). The Patent Owner notes that the '400 Patent, entitled "Protective Cover for Laptop Computer," discloses a protective cover having two elements which are separate and independent from each other. The '400 Patent does ***not*** disclose ***a case for enclosing*** a laptop computer for portable use.

Further, the Board incorrectly concluded that the lower case body and case cover of *Alexander* discloses "a second elastic planar element being separate and independent from a first elastic planar element" as recited in claims 1 and 39 of the '400 Patent. The Patent Owner submits that *Alexander* fails to teach, disclose, or suggest at least this element as required under 35 U.S.C. §103(a). *Alexander* discloses that the lower case body is moveably mounted to the case cover. Specifically, *Alexander* states that:

> The case C of the portable computer system P includes a lower case body 200 and ***a case cover 202 which is movably mounted to the case body 200 at a connector mechanism which is a part of the case C*** of the laptop computer L. A suitable connector mechanism, for example, is provided in the form of a pair of hinged or pivoted connectors 204 (FIG. 3) at rear side portions of the laptop computer L. Both the lower case body 200 and the cover 202 are preferably formed of a molded synthetic resin, preferably a suitable polypropylene, of a suitable rigidity and strength.

A62 at col. 5, ll. 37-47 (*emphasis added*). *Alexander* designates the laptop case as C, the laptop computer as L, and the entire system as P. A62. Here, speaking of case C, *Alexander* discloses that the case cover 202 (upper case) is ***movably mounted to*** the case body 200 (lower case) at a ***connector mechanism which is part of case C***. An example of a connector mechanism is given "in the form of a pair of hinged or pivoted connectors" as shown on the laptop computer L. A62. As such, *Alexander* discloses that the upper case is connected to the lower case by a movable connection mechanism.

It is not the Patent Owner's position that the hinged connector mechanisms 204 are the actual connector mechanism that connects the lower case body 200 to the case cover 202. Indeed, *Alexander* discloses that the hinged connector mechanisms 204 are an ***example*** of the type of connector mechanism that can be used to movably mount the case body 200 to the case cover 202:

> The case C of the portable computer system P includes a lower case body 200 and **a case cover 202 which is movably mounted to the case body 200 at a connector mechanism which is a part of the case C** of the laptop computer L. **A suitable connector mechanism**, **for example**, is provided in the form of a pair of hinged or pivoted connectors 204 (FIG. 3) at rear side portions of the laptop computer L.

A62 at col. 5, ll. 37-43 (*emphasis added*). *Alexander* is clear that ***the case cover 202 is movably mounted to the case body 200 at a connector mechanism which is part of the case***. The discussion with regard to the hinged connectors 204 is an ***example*** of the type of connector mechanism that is used to connect the case cover 202 to the case body 200.

Additionally, *Alexander* still discloses throughout the specification and claim language that the case cover 202 ***is moveably mounted*** to the case body 200.

For example, claim 1 of *Alexander* provides as follows:

> 1. A portable computer system, comprising:
> ...
> said case having:
> a lower case body with a receptacle formed therein to fittingly receive said housing; and
> ***a case cover movably mounted with said lower***

case body to open and close said case;

....

A63 (*emphasis added*; the Patent Owner also notes that "movable" was corrected to read "movably" in a Certificate of Correction). The Patent Owner submits that the above-emphasized language of claim 1 of *Alexander* further supports that the upper and lower pieces of the case are moveably mounted to one another. Since they are moveably mounted to one another ***to open and close the case***, they are not separate and independent. As such, *Alexander* does not disclose, teach, or suggest a protective cover for a laptop computer that comprises a first elastic planar element that is ***separate and independent from*** a second elastic planar element, as recited in independent claim 1 and independent claim 39 of the '400 Patent.

Alexander consistently discloses that the case cover 202 is mounted to the case body 200. *See e.g.*, A55, A58-A59, and A63 (claim 1). The plain language of claim 1, as well as the specification, indicates that the case cover is ***movably mounted*** to the lower case body to open and close said case. As such, the case cover and lower case body of *Alexander* ***must*** be mounted to each other in order to operate as recited, *i.e.*, they must be connected so that these two pieces of the case can ***open and close***, as recited in claim 1 of *Alexander*.

However, even with the multiple statements throughout the specification and claim language of *Alexander*, the Board concluded that *Alexander* contains a typographical error at column 5, lines 37-41. A8. *Alexander* states that "the case

C of the portable computer system P includes a lower case body 200 and a case cover 202 which is movably mounted to the case body 200 at a connector mechanism which is part of the case of the laptop computer." A62 at col. 5, ll. 37-41. The Board stated that it would be obvious to one of ordinary skill in the art that the connector mechanism is part of the laptop L, and not the case C. A8. Not only is the Board's determination of a typographical error legally incorrect, the Patent Owner submits that the interpretation is both factually incorrect and nonsensical.

An error in an issued patent may be corrected in four ways: reissue, certificate of correction, disclaimer, and reexamination. *See* MPEP §1400.01. A certificate of correction of a patent may be obtained to correct a typographical error by the Applicants "if the correction does not involve such changes in the patent as would constitute new matter or would require re-examination." 35 U.S.C. §255. If an error has not been corrected by a certificate of correction, "a district court can act to correct an error only if (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims." *Novo Indus., L.P., Micro Molds Corp.* 350 F.3d 1348, 1354 (Fed. Cir. 2003). Although the decision in *Novo Industries* relates to the standard for when a district court may

correct an error in a patent, a similar standard should apply to the interpretation of a patent by the Board.

In accordance to the standard set forth in *Novo Industries*, the interpretation of a typographical error by the Board is improper for at least the reason that the interpretation is subject to reasonable debate. The Patent Owner submits that the Board lacked the authority to conclude that this statement in *Alexander* contains a typographical error, much less base the conclusion that *Alexander* discloses the separate and independent elastic planer elements of the '400 Patent on this improper determination. The Patent Owner notes that a certificate of correction was filed and issued for *Alexander*. A65. In fact, the certificate of correction for *Alexander* was filed to correct the word "moveable' in claim 1 such that claim 1 correctly recited "a case cover ***movably mounted*** with said lower case body." However, while the certificate of correction was filed to correct additional errors within *Alexander*, the certificate of correction was ***not filed*** to "correct" the sentence at issue recited at column 5, lines 38-41.

In addition to the claim language of claim 1, the specification consistently discusses a ***case*** for ***protecting, receiving, enclosing, and inserting*** the laptop computer. As such, both the specification and claim 1 contradict the Board's interpretation and determination of a typographical error. Not only was there never a request to correct this alleged "typographical error," the Board did not have

authority to make such an interpretation as it contradicts the specification and the claim language of *Alexander*. As such, the Board's interpretation of a typographical error is not only incorrect, but is also improper under the standard set forth in *Novo Industries.*

In addition, the Patent Owner submits that the Board's interpretation of the typographical error is not only improper under *Novo Industries*, the interpretation is also factually wrong and nonsensical. *Alexander* states that the "portable computer system of the present invention with its integral carrying case ***protects the computer system from damage***." A60 at col. 2, ll. 13-15. Under the Board's construction, the hinge is part of the laptop and not part of the case. As such, the entire laptop L of *Alexander* would not be enclosed or protected by the case. Rather, the laptop would be uncovered and unprotected along its entire hinge region. Such a construction contradicts and defeats, the very purpose of *Alexander*, which is a protective case for a laptop.

Further, *Alexander* states that the housing H is "fittingly received ... in the case C once inserted" and that "the case has a receptacle formed in it with dimensions in which the housing is snugly fitted." A62 at col.5, ll. 64-65; A60 at col. 1, ll. 62-63. If the case of *Alexander* were a two-piece cover as ruled by the Board, the housing would not be inserted and enclosed in the case, but rather the case would be connected by the housing. Accordingly, the Board improperly

concluded that *Alexander* contained a typographical error, which if corrected, disclosed that the case cover and case body were separate and independent.

Additionally, the case 200 and lower case body 202 of *Alexander* are not separate and independent as they are connected by clips to secure from opening and closing. *Alexander* discloses that:

> [a] connector clasp 300 is pivotally mounted by a connector pin or stud 302 to an opening 304 formed in each of the side walls 210 and 212 of the lower case body 200. Each connector clasp 300 has a connector slot 306 formed in an upper end 308. The connector slots 306 are adapted to slide over and engage corresponding connector tabs or studs 310 mounted extending outwardly from each of the side walls 288 and 290 of the case cover 202. The connector clasps 300 and the connector tabs 310 serve as an additional ***closure or locking mechanism for the case C*** and for the portable computer system P in addition to the release mechanisms 292.

A63 at col. 7, ll. 32-44 (*emphasis added*). This disclosure of *Alexander* indicates that the *connector* clasp 300 is pivotally mounted to the case body 200. Further, there is a *connector* slot 306 located in the upper end of the connector clasp 300 that is adapted to slide over and engage a connector tab or stud 310 mounted on the upper case body 202. A63. This clearly discloses that the lower case body and case cover (202 and 200) of *Alexander* are designed to be ***connected***.

Finally, the Board has misinterpreted Figure 3 of Alexander, as the statements of the Decision are inconsistent with the specification and claims. Figure 3 of *Alexander* is an "exploded" view of the computer system disclosed in *Alexander*. A60 at col. 2, ll. 33-34 ("FIG. 3 is an exploded isometric view….").

Thus, many of the components of the portable computer system with integral carrying case disclosed by *Alexander* are disassembled for illustrative/explanatory purposes. Further, *Alexander* consistently discloses that the case cover 202 is mounted to the case body 200. A55, A58-A59, and A63 (claim 1). Accordingly, Figure 3 does not support the contention that *Alexander* discloses a case comprised of two separate and independent parts as it is used to protect a laptop computer in the portable computer system with integral carrying case.

Thus, the ruling of the Board should be overturned as the asserted *Alexander* reference fails to teach every element of Patent Owner's claimed invention(s). *See Ex parte Clapp*, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. & Inter. 1985) ("To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references."); *KSR Int'l* at 418, (quoting *In re Kahn* at 988) ("[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.").

B. The Board erred in finding that *Genest* discloses the tabs as taught by claims 1 and 39.

The Board affirmed the Examiner's rejection of independent claims 1 and 39 under 35 U.S.C. 103(a) as being unpatentable over *Alexander* in view of *Genest*. Specifically, the Board ruled that *Genest* discloses "the first elastic planer element including ... a plurality of tabs ... wherein each tab extends ... over an inside surface of the display portion so as to grip the display portion" and "the second elastic planar element including ... a plurality of tabs ... wherein each tab extends ... over an inside surface of the keyboard portion so as to grip the keyboard portion," as recited in claim 1. While claim 39 recites "a tab" instead of "a plurality of tabs," *Genest* fails to disclose, teach, or suggest the features of the tab of claim 39 for similar reasons to those discussed below with respect to claim 1.

The Board affirmed the Examiner's allegations (by adopting the Third Party Requester's proposed rejection) that the tabs used to secure the device in the case of *Genest* are the same as the tabs used to secure the shells to a laptop computer as recited in claim 1 of the '400 Patent. This is not correct, as the following excerpt from *Genest* explains:

> A pair of retaining portions 44 extend downwardly from a top wall extending from the rear wall 40 to assist in releasably retaining the handheld computer 12 in the operative position on the computer attachment portion 14. Specifically, as shown in FIG. 1, the top edge of the computer 12 is **received underneath the retaining portions 44** and the retaining portions 44 engage the front side 26 of the outer shell 28. When the computer 12 is in its operative position, its data

> port 36 is electrically coupled to a data connector 48, schematically represented at 41, which is carried on the computer attachment portion 14….
>
> A locking mechanism 50 is provided within the data connector housing portion 49 and functions to secure the handheld computer 12 in its operative position within the outer shell of the computer attachment portion 14. In the illustrated embodiment, the data connector housing portion 49 slides downwardly (as viewed in the Figures) to enable the top edge of the computer 12 to be **slid underneath the retaining tabs 44 and then is slid upwardly to engage the lower edge of the computer,**
>
> In general, ***the retaining tabs 44, the data connector housing portion and the locking mechanism 50 function together as a computer retainer*** to retain the handheld computer 12 on the computer attachment portion 14 of the protective case 10.

A78 at col. 9, ll. 55-65; A79 at col. 10, ll. 11-38. In summary, *Genest* discloses a device using ***a combination*** of ***retaining tabs*** 44 and ***a movable housing portion*** 49 complete with ***a locking mechanism*** 50 and ***a slide switch*** 52 ***to retain the handheld computer***. When the locking mechanism 50 disengages the slide switch 52 the housing portion 49 is allowed to move, creating an opening where the electronic device is inserted into the case. The device is pressed to the edge of the case 14 where the tabs 44 prevent that end of the device from falling out of the case. The housing portion 49 is then slid back into place and the locking mechanism 50 engages the slide switch 52 to hold the device in the case.

The tabs of *Genest* are used in conjunction with a movable device that includes a locking mechanism. They ***do not deform or move*** with the body of the case at any time to allow for the entry of the electronic device. They are ***stationary***

protrusions that the device is slid under while the locking mechanism is engaged to hold the device in place.

Moreover, Patent Owner is not seeking to read further limitations into the claims as suggested by the Examiner and the Board. Indeed, the claim language of the '400 Patent ***specifically*** recites a first and second ***elastic*** planar element including a raised edge including a plurality of tabs. The elastic nature of the planar elements allows the tabs to move with the body of the case for entry of the electronic device:

> The *malleable or elastic* nature of the material comprising the exterior cover 100, *such as plastic, allows for the tab 300 to be pushed back* or away from the inside surface 308 of the edge 302 *without breaking the tab* 300, *while allowing for the tab 300 to return to its initial shape or arrangement* after the full width of the laptop 190 is inserted into the exterior cover 100. A50-A51 at col. 8, l. 65 - col. 9, l. 4(*emphasis added*).

> The *malleable or elastic* nature of the material comprising the exterior cover 100, *such as plastic, allows for the second tab 500 to be pushed back* or away from the inside surface 508 of the rigid planar sheet 510 *without breaking the second tab 500, while allowing for the second tab 500 to return to its initial shape or arrangement* after the full width of the laptop 190 is inserted into the exterior cover 100. A51 at col. 9, ll. 41-48 (*emphasis added*).

Neither *Alexander* nor *Genest*, either alone or in combination, disclose, teach, or suggest the presently claimed tabs that move with the elastic planar element to secure the device. (Indeed, *Alexander* discloses a rigid case: "Both the lower case body 200 and the cover 202 are preferably formed of a molded

synthetic resin, preferably a suitable polypropylene, of a suitable **rigidity** and strength." A62 at col. 5, ll. 44-47 (*emphasis added*)).

For at least these reasons, the Patent Owner submits that the Board erred in finding *Genest* discloses the "plurality of tabs" of claim 1 and the "tab" of claim 39. Accordingly, the Patent Owner respectfully submits that independent claim 1 and independent claim 39 are allowable over *Alexander* in view of *Genest*.

C. The Board erred in finding that the Examiner provided sufficient rationale for combining *Alexander* and *Genest* to disclose the subject matter of the '400 Patent.

The Board found that the rationale by the Examiner to combine *Alexander* and *Genest* was "sufficient to support the conclusion of obviousness." A14. The Board relied on the Examiner's statement that the rationale was "so that the protective cover can be more securely attached to the laptop." A14. The Patent Owner submits that the Board erred in failing to find that the combination to combine *Alexander* and *Genest* is improper.

In the Action Closing Prosecution, the Examiner stated that "the *Genest* tabs 44 are a relevant teaching for the 'plurality of tabs' (ref. claim 1) and 'a tab' (ref. claim 39)...," and the Examiner adopted the Third Party Requester's Comments in this regard. A40-A41. However, "relevant" does not render the presently claimed tabs "obvious." As such, the Patent Owner submits that the Examiner failed to

meet his burden of proof. *See* MPEP §2143 (To reject a claim based on this rationale, Office personnel must resolve the *Graham* factual inquiries. Then, Office personnel must articulate the following: (1) a finding that at the time of the invention, there had been a recognized problem or need in the art, which may include a design need or market pressure to solve a problem; (2) a finding that there had been a finite number of identified, predictable potential solutions to the recognized need or problem (3) a finding that one of ordinary skill in the art could have pursued the known potential solutions with a reasonable expectation of success; and (4) whatever additional findings based on the *Graham* factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness. *If any of these findings cannot be made, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art*) (*emphasis added*).

The Board failed to address the argument presented by the Patent Owner in the Appeal Brief that the Examiner failed to meet his burden of proof with respect to the tabs of *Genest*. As previously discussed, *Genest* fails to show or suggest the tabs as disclosed by independent claims 1 and 39. In addition, the Patent Owner respectfully submits that the tabs of *Genest* would not be obvious to combine with *Alexander* for at least the reason that the tabs of *Genest* do not deform or move and, therefore, would not be obvious to combine with the case of *Alexander* which

is secured by the use of friction. In fact, even assuming, for the sake of argument, that the case of *Alexander* were to correspond to the disclosed exterior covers of the '400 patent, it would be difficult to insert a laptop computer into the case of *Alexander* having the tabs of *Genest*. When the claims are considered as a whole, as required by 35 U.S.C. § 103, it would be improper to combine *Alexander* with *Genest* to teach the exterior covers of independent claims 1 and 39.

As such, the Board erred in concluding that the rationale by Examiner for the combination of *Alexander* and *Genest* was sufficient for at least the reason that the Examiner failed to show why the presently claimed tabs are obvious in light of the stationary tabs that "function together" with the data connector housing portion and the locking mechanism to retain the computer in *Genest*.

D. Claims 2, 4-8, and 26-38 Are Patentable Over *Alexander* and *Genest*.

Dependent claims 2, 4-8, and 26-38 stand rejected under 35 U.S.C. 103(a) as allegedly obvious over *Alexander* in view of *Genest*. The Patent Owner submits that dependent claims 2, 4-8, and 26-38 are allowable for at least the reason that the claims depend from an allowable independent claim. *See, e.g., In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

III. The Board Erred in Affirming the Rejection of Claim 3 Under 35 U.S.C. 103(a) as Obvious Over *Alexander* in View of *Genest* in Further View of *Park*

Dependent claim 3 stands rejected under 35 U.S.C. 103(a) as allegedly obvious over *Alexander* in view of *Genest* in further view of *Park*. The Patent Owner submits that dependent claim 3 is allowable for at least the reason that this claim depends from an allowable independent claim. *See, e.g., In re Fine*, 837 F. 2d 1071 (Fed. Cir. 1988).

CONCLUSION

For the foregoing reasons, the Court should reverse the decision of the Board.

Respectfully submitted,

/s/ Scott A. Horstemeyer

_____

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ADDENDUM

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INCASE DESIGNS CORP.
Requester

v.

TECH SHELL, INC.[1]
Patent Owner, Appellant

Appeal 2013-009127
Inter partes Reexamination Control 95/001,767
Patent US 7,907,400 B2[2]
Technology Center 3900

Before STEVEN D.A. McCARTHY, DANIEL S. SONG and JAMES P. CALVE, *Administrative Patent Judges*.

SONG, *Administrative Patent Judge*

DECISION ON APPEAL

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[1] Tech Shell, Inc. is the Patent Owner and the real party in interest (Appeal Brief of Patent Owner (hereinafter "App. Br.") 1).
[2] Patent US 7,907,400 B2 (hereinafter "'400 patent") issued March 15, 2011 to Bekele.

Appeal 2013-009127
Reexamination Control 95/001,767
Patent US 7,907,400 B2

STATEMENT OF THE CASE

Claims 1-8 and 26-39 of the '400 patent are subject to reexamination while claims 9-25 and 40-53 are not subject to reexamination (Right of Appeal Notice[3] (hereinafter "RAN") 1). Each of claims 1-8 and 26-39 subject to reexamination stand rejected (RAN 1). The Patent Owner appeals under 35 U.S.C. §§ 134(b) and 315 from the Examiner's rejections with respect to all of the rejected claims (App. Br. 4). The Requester does not cross-appeal the decisions of the Examiner not adopting certain proposed rejections. We have jurisdiction under 35 U.S.C. §§ 134(b) and 315.

The '400 patent is related to Patent US 7,643,274 which is the subject of Reexamination Control No. 95/001,766 (App. Br. 1-2). Both Patent US 7,643,274 and the subject '400 patent are involved in the legal action *Techshell Inc. v. Jwin Electronics Corporation.*, 3:11-cv-00556-MCR-CJK (N.D. Florida) which has been stayed pending outcome of the reexamination proceedings (App. Br. 2).

We AFFIRM the Examiner's rejections.

The '400 patent is directed to a protective cover for a laptop computer (Abstract). Representative independent claim 1 reads as follows (Claims App'x, italics added):

> 1. An exterior cover for a laptop computer having a display portion and a keyboard portion, comprising:
>
> a first *elastic* planar element for placement on an outside surface of the display portion, the first elastic planar element including:

[3] The Examiner's Answer merely incorporates the RAN by reference. Hence we cite to the RAN herein.

> a raised edge along a portion of a perimeter of the first elastic planar element, wherein the raised edge extends perpendicularly from the first elastic planar element and toward the display portion; and
>
> *a plurality of tabs* located on the raised edge, wherein each tab extends from the raised edge over an inside surface of the display portion so as to grip the display portion; and
>
> a second *elastic* planar element for placement on an outside surface of the keyboard portion, *the second elastic planar element being separate and independent from the first elastic planar element*, the second elastic planar element including:
>
> a raised edge along a portion of a perimeter of the second elastic planar element, wherein the raised edge extends perpendicularly from the second elastic planar element and toward the keyboard portion; and
>
> *a plurality of tabs* located on the raised edge, wherein each tab extends from the raised edge over an inside surface of the keyboard portion so as to grip the keyboard portion.

Independent claim 39 similarly recites "the second elastic planar element being separate and independent from the first elastic element" but merely recites "a tab" for the planar elements rather than a plurality of tabs.

The Examiner rejects the claims under 35 U.S.C. § 103(a) as follows:

1. Claims 1, 2, 4-7 and 26-39 as obvious over Alexander[4] in view of Genest.[5]

2. Claim 3 as obvious over Alexander in view of Genest and Park.[6]

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[4] U.S. Patent No. 5,835,344 issued November 10, 1998.
[5] U.S. Patent No. 6,480,377 B2 issued November 12, 2002.

3. Claim 8 as obvious over Alexander in view of Genest.

ISSUES

The following issues have been raised in the present appeal.

1. Whether the Examiner erred in finding that Alexander discloses a case body 200 that is separate and independent from a case cover 202.

2. Whether the Examiner erred in finding that Genest discloses a case having "a plurality of tabs" as recited in claim 1.

3. Whether the Examiner erred in concluding that it would have been obvious to one of skill in the art to provide the carrying case of Alexander with tabs disclosed in Genest to result in the invention claimed.

PRINCIPLES OF LAW

"The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 415-16 (2007). If a technique has been used to improve one device and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. *Id.* at 417.

ANALYSIS

In rejecting all of the claims at issue, the Examiner adopted the positions of the Requester as set forth in pages 19-21 and 27-28 of the

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[6] U.S. Patent No. 6,405,881B1 issued June 18, 2002.

Request for *Inter Partes* Reexamination (RAN 5). The Examiner finds that Alexander discloses most of the structural limitations of independent claim 1, including the limitation "the second elastic planar element being separate and independent from the first elastic planar element." (RAN 8). The Examiner concedes that Alexander fails to disclose the recited tabs but relies on Genest for teaching "a protective case having retaining tabs 44 located on a raised edge" which function to retain the handheld computer (RAN 8-9). The Examiner further reproduces a portion of the Request for *Inter Partes* Reexamination adopted to reject the claim which concludes that:

> [i]t would have been obvious to a person of ordinary skill in the art at the time the invention was made to add the tabs described in Genest to the raised edges of the protective cover in Alexander (e.g., front wall, rear wall, and side walls of the case cover 202 and/or lowercase body 200) so that the protective cover can be more securely attached to the laptop. A person of ordinary skill in the art would be motivated to combine the laptop cover of Alexander with the tabs of Genest because the resulting laptop cover would be more desirable as an improvement on the prior art technique of Alexander using only friction to hold the cover in place, and the resulting cover would have enhanced commercial opportunities over Alexander because it would be more secure and adding tabs involves only routine skill in the art.

(RAN 9).

The Patent Owner disagrees with the Examiner's findings and conclusion in its appeal for the reasons set forth in its brief. We address the various arguments of the Patent Owner *infra*. Only those arguments actually made by the Patent Owner have been considered and any arguments not made are deemed to be waived. *See* 37 C.F.R. § 41.67(c)(1)(vii).

Independent Claim 1

Separate and Independent

The Patent Owner argues that the Examiner erred because "[n]either Alexander nor Genest, either alone or in combination, disclose, teach, or suggest" the clam 1 limitation "the second elastic planar element being separate and independent from the first elastic planar element." (App. Br. 5). The Patent Owner asserts that "Alexander discloses a ***one-piece*** form fitting briefcase for a laptop computer" and "two connection methods, *i.e.*, hinges and clips, ***to join the top and bottom sections of the laptop case***." (App. Br. 6, emphasis in original). In particular, according to the Patent Owner, because Alexander discloses a connector clasp 300 mounted to the lower case body 200 that engages a connector stud 310 on the case cover 202, the case body 200 and the case cover 202 are "***connected***." (App. Br. 6, emphasis in original). This argument is unpersuasive.

Implicit in the Patent Owner's argument is that the limitation "separate and independent" should be interpreted to require the first elastic planar element to be "unconnected" from the second elastic planar element, even by intervening structure or components such as the locking mechanism of Alexander (i.e., connector clasp 300 and the connector stud 310).[7] However, even if the Patent Owner's implicit claim construction is considered to be

[7] We also note that the Patent Owner's implied interpretation of the limitation "separate and independent" so as to preclude any intervening parts that may serve to connect the first and second elastic planar elements is problematic because the cover of the '400 patent also relies on intervening display portion and keyboard portion of the laptop that are hinged together to function, these components "connecting" the first and second elastic planar elements together.

correct, Alexander discloses this limitation because, in the operative configuration wherein the portable computer system of Alexander is in use, the locking mechanism (i.e., connector clasp 300 and the connector stud 310) is not used. As such, the case body 200 and the case cover 202 are "separate and independent" as well as "unconnected" from each other. Furthermore, claim 1 is also open ended because it uses the transitional term "comprising," thereby allowing inclusion of additional components such as a locking mechanism (i.e., connector clasp 300 and the connector stud 310). Correspondingly, the Patent Owner's argument based on the locking mechanism of Alexander is unpersuasive.

The Patent Owner also argues that in Alexander, "the upper case is connected to the lower case by a moveable connection mechanism that is part of the laptop case." (App. Br. 7, *citing* Alexander, col. 5, ll. 37-47). We presume that unlike the locking mechanism discussed *supra*, such connection mechanism is asserted to permanently connect the lower case body 200 and the case cover 202 together. The Patent Owner's assertion is based on a single statement in Alexander which states that "case cover 202 … is movably mounted to the case body 200 at a connector mechanism which is a part of the case C of the laptop computer L." (Alexander, col. 5, ll. 37-41). Hence, the Patent Owner's position is that because Alexander discloses a connector mechanism, it does not disclose "separate and independent" planar elements as required by the claims (App. Br. 7). As noted *supra*, the Examiner's position is that "Fig. 3 of Alexander clearly discloses an exterior cover for a laptop computer, the exterior cover

comprising a lower case body 200 and a *separate and independent* case cover 202." (RAN 8, emphasis in original).

We agree with the Examiner's findings and we are not persuaded by the Patent Owner's arguments for various reasons. Firstly, it would be apparent to a person of ordinary skill in the art that the statement of Alexander relied upon by the Patent Owner includes a typographical error because the laptop computer L does not have a carrying case C. *See In re Yale*, 434 F.2d 666, 668-69 (CCPA 1970) (holding that an obvious typographical error in a chemical formula was not a disclosure of the compound identified by the erroneous formula). The specification and Figure 3 of Alexander discloses that the portable computer system "P" includes a "carrying case C," and that the disclosed "laptop computer L" is contained in a "housing H" which is "engagingly fitted" into the carrying case C (*see* Alexander, col. 2, ll. 52-56; col. 5, l. 37; Fig. 3). Correspondingly, it is the portable computer system P that includes a carrying case C into which the laptop L is received, and it is clear that the laptop computer L does not have a carrying case C. Thus, the statement of Alexander relied upon by the Patent Owner stating "case C of the laptop computer L" is internally inconsistent with the remainder of the specification and Figure 3 (Alexander col. 5, l. 41).

The error in the singular statement of Alexander relied upon by the Patent Owner is further confirmed by the immediately following sentence of Alexander which states "[a] suitable connector mechanism, for example, is provided in the form of a pair of hinged or pivoted connectors 204 (FIG. 3) at rear side portions of the laptop computer." (Alexander, col. 5, ll. 41-47;

Figure 3; *see also* Comments by Third Party Requester, filed August 9, 2012, pgs. 3-4). The pivoted connectors 204 identified are the hinges that pivotably connect the display panel 280 of housing H of the laptop L to the remainder (i.e., keyboard portion) of the laptop L (*see* Alexander, col. 7, ll. 15-18; Fig. 3).

The Patent Owner also directs our attention to claim 1 of Alexander which recites "a case cover movabl[y] mounted with said lower case body" and asserts that this limitation evinces that Alexander fails to disclose a first elastic planar element that is separate and independent from a second elastic planar element (App. Br. 7-8). The Patent Owner asserts that "the case cover and lower case body *must* be mounted to each other in order to operate as recited, *i.e.*, they must be connected via, *e.g.*, a hinge so that these two pieces of the case can *open and close*," as also recited in claim 1 (App. Br. 9, emphasis in original).

However, the Patent Owner overlooks the fact that the recited movable mounting of the case cover/case body, and opening/closing thereof, are entirely attainable in the apparatus of Alexander *without a separate hinge* therebetween because the Alexander patent and its claim 1 are directed to "[a] portable computer system" which not only includes the carrying case C *but also includes the laptop computer L itself.* There is no dispute that the case cover 202 is movable relative to the lower case body 200 when these components are attached to the laptop L which is a component of Alexander's portable computer system P. Indeed, the specification of Alexander discloses that "the display panel housing 280 and its fitted case cover 202 are … pivotally movable upwardly at hinged connectors 204 with

respect to the remainder of the housing H and case C." (Alexander, col. 7, ll. 25-28). Correspondingly, the carrying case C does open and close as mounted to the laptop L of the portable computer system P, both the carrying case C and the laptop L being components thereof and the subject of claim 1 of Alexander. Hence, it is entirely consistent and natural that claim 1 (of Alexander) would recite that the case cover is movably mounted with the lower case body, and that the case C opens and closes, the pivoted connectors 204 being part of the portable computer system P.

The Patent Owner further asserts that "Examiner has misinterpreted Figure 3 of Alexander" because Figure 3 merely shows an exploded view, so it cannot support the finding that the case body 200 and the case cover 202 are separate and independent parts (App. Br. 9). The Patent Owner also argues that "the hinged connector mechanisms 204 are an ***example*** of the type of connector mechanism that can be used to movably mount the case body 200 to the case cover 202." (App. Br. 8-9, emphasis in original).

However, these arguments are unsupported by the preponderance of the evidence and would require us to accept the unlikely proposition that Figure 3 which illustrates in detail the numerous features of the carrying case C (and discusses them in the specification) would omit an illustration of a hinge that connects the case body 200 and the case cover 202 and performs the critical function of opening and closing the carrying case C. As noted, Figure 3 and the detailed discussion thereof in Alexander do not illustrate or identify any "connector mechanism" other than the pair of pivoted connectors 204 that are part of the laptop computer L of the portable computer system P to which Alexander is directed (*see* Alexander, col. 7, ll.

15-18; Fig. 3). Thus, a person of ordinary skill in the art would understand that Alexander and Figure 3 disclose pivoted connectors 204 of the laptop L as functioning to movably open and close the case body 200 and the case cover 202 of the carrying case C. *See In re Aslanian*, 590 F.2d 911, 914 (CCPA 1979) (drawings can be relied upon for what they reasonably disclose and suggest to one of ordinary skill in the art). Importantly, while acknowledgement in Alexander that the pivoted connectors 204 are an "example" leaves open the possibility that other embodiments of the portable computer system P may use different configurations of the pivoted connectors (i.e., hinges) in order to effectuate the opening and closing of the carrying case C, that invitation for variation does not detract from the disclosure of Alexander that discloses the use of pivoted connectors 204 of the laptop L for this very purpose.

Thus, in view of the above, as the Examiner found, we likewise find that the lower case body 200 and the case cover 202 of Alexander are "separate and independent" as shown in Figure 3.

Tabs

The Patent Owner also asserts that the Examiner erred in rejecting claim 1 asserting deficiencies with respect to the secondary reference Genest. In particular, the Patent Owner notes that Genest discloses "a device using *a combination* of *retaining tabs* 44 and *a movable housing portion* 49 complete with *a locking mechanism* 50 and *a slide switch* 52 *to retain the handheld computer.*" (App. Br. 11, emphasis in original). According to the Patent Owner, the retaining tabs 44 therefore "*do not deform or move* with

the body of the case" but instead, "are *stationary protrusions.*" (App. Br. 12, emphasis in original). The Patent Owner argues that in contrast, claim 1 of the '400 patent recite that the first and second planar elements are "elastic" and, thus, it is this "elastic nature of the planar elements [that] allows the tabs to move with the body of the case for entry of the electronic device." (App. Br. 13, *quoting* col. 9, ll. 41-48).

However, the Patent Owner's argument is not persuasive because, as noted by the Examiner, "none of the claims under reexamination recite the language 'the tabs deform or move with the body of the case …', nor do any claims recite the particular manner of entry of an electronic device." (RAN 10). Indeed, the Patent Owner argues limitations not present in the claims and imports limitations of the embodiment described in the specification of the '400 patent to assert that Genest fails to disclose the claimed invention. *See In re Self*, 671 F.2d 1344, 1348 (CCPA 1982); *see also Superguide Corp. v. DirecTV Enterprises*, Inc., 358 F.3d 870, 875 (Fed. Cir. 2004):

> Though understanding the claim language may be aided by the explanations contained in the written description, it is important not to import into a claim limitations that are not a part of the claim. For example, a particular embodiment appearing in the written description may not be read into a claim when the claim language is broader than the embodiment.

Clearly, the retaining tabs 44 of Genest are disclosed therein as functioning to retain the handheld computer as required by claim 1 (Genest, col. 9, ll. 55-62; Fig. 1). Whereas the locking mechanism 50 is used in conjunction therewith, claim 1 of the '400 patent does not preclude other components being used in combination with the recited plurality of tabs to retain the first and second planar elements. The claim also does not require

that the recited tabs deflect during insertion of the retained computer component.

The Patent Owner also asserts that because Alexander states that "[b]oth the lower case body 200 and the cover 202 are preferably formed of a molded synthetic resin, preferably a suitable polypropylene, of a suitable **rigidity** and strength," it discloses a rigid carrying case. (App. Br. 13, *quoting* Alexander, col. 5, ll. 44-47 with emphasis added). The Patent Owner's argument is unpersuasive.

Firstly, contrary to the Patent Owner's assertion, suggesting "suitable rigidity and strength" (*id.*) does not mean that the material should be absolutely "rigid" so as to be non-deformable or inelastic. Rather, the teaching of Alexander is that the material should be selected so that it is "suitable" in both rigidity and strength so that the components of the case perform their intended function described therein. Secondly, Alexander discloses that the appropriate material is "polypropylene" which is one of the materials that the specification of the Patent Owner's '400 patent describes as being suitable for the first and second elastic planar elements disclosed therein (*compare* Alexander, col. 5, ll. 44-47 *with* '400 patent, col. 5, ll. 7-10). In this regard, in describing the planar sheets, the specification of the '400 patent refers to these sheets as "*rigid* planar sheets 102 and 112" that may be manufactured using various plastics (col. 5, l. 66-col. 6, l. 12, emphasis added). Correspondingly, it is clear that even the inventors of the Patent Owner's '400 patent considered rigidity and elasticity to be a matter of degree and that a component/material may be accurately described as being rigid while also being described as elastic.

Finally, the Patent Owner appears to argue that the Examiner has failed to articulate an obviousness rationale in support of the rejection based on the combination of Alexander and Genest (App. Br. 12). However, as noted *supra*, the Examiner adopted the rationale articulated in the Request for *Inter Partes* Reexamination (*see* RAN 8-9). In this regard, as reproduced *supra*, the rationale is that the combination suggested would have been obvious, *inter alia*, "so that the protective cover can be more securely attached to the laptop," that it would "improve[] on the prior art technique of Alexander using only friction to hold the cover in place," and that "adding tabs involves only routine skill in the art." (RAN 9). We agree and find the articulated rationale sufficient to support the conclusion of obviousness.

In view of the above, we conclude that the Examiner did not err in rejecting claim 1 as obvious over the combination of Alexander and Genest. The invention of claim 1 is merely a "combination of familiar elements according to known methods" and "does no more than yield predictable results." *KSR*, 550 U.S. at 415-16. The provision of tabs in a protective case is a known technique and would be within the skill of those in the art. *Id.* at 417. Therefore, the Examiner's rejection of claim 1 is affirmed.

Dependent Claims 2, 4-8 and 26-38

The Patent Owner asserts the patentability of these claims based on their ultimate dependency on independent claim 1 (App. Br. 14). Hence, these claims fall with claim 1.

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Reexamination Control 95/001,767
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Independent Claim 39

The Patent Owner repeats substantively the same arguments as those proffered with respect to independent claim 1 to assert patentability of claim 39 (App. Br. 14-23). For the reasons discussed *supra*, these arguments are unpersuasive. Hence, we affirm the Examiner's rejection of claim 39.

Dependent Claim 3

The Patent Owner asserts the patentability of claim 3 based on its ultimate dependency on independent claim 1 (App. Br. 14). Hence, claim 3 also falls with claim 1.

CONCLUSIONS

1. The Examiner did not err in finding that Alexander discloses a case body 200 that is separate and independent from a case cover 202.

2. The Examiner did not err in finding that Genest discloses a case having "a plurality of tabs" as recited in claim 1.

3. The Examiner did not err in concluding that it would have been obvious to one of skill in the art to provide the carrying case of Alexander with tabs disclosed in Genest to result in the invention claimed.

ORDER

The Examiner's rejections of claims 1-8 and 26-39 are AFFIRMED.

Requests for extensions of time in this *inter partes* reexamination proceeding are governed by 37 C.F.R. § 1.956.

Appeal 2013-009127
Reexamination Control 95/001,767
Patent US 7,907,400 B2

AFFIRMED

peb

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US007907400B2

(12) **United States Patent**
Bekele

(10) **Patent No.: US 7,907,400 B2**
(45) **Date of Patent: *Mar. 15, 2011**

(54) **PROTECTIVE COVER FOR LAPTOP COMPUTER**

(75) Inventor: **Haile Bekele**, Pensacola, FL (US)

(73) Assignee: **Tech Shell, Inc.**, Pensacola, FL (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **12/544,906**

(22) Filed: **Aug. 20, 2009**

(65) **Prior Publication Data**

US 2009/0310297 A1 Dec. 17, 2009

Related U.S. Application Data

(63) Continuation of application No. 11/788,329, filed on Apr. 19, 2007, now Pat. No. 7,643,274.

(60) Provisional application No. 60/745,323, filed on Apr. 21, 2006.

(51) **Int. Cl.**
G06F 1/16 (2006.01)

(52) **U.S. Cl.** **361/679.55**; 206/320

(58) **Field of Classification Search** 206/320; 361/679.55

See application file for complete search history.

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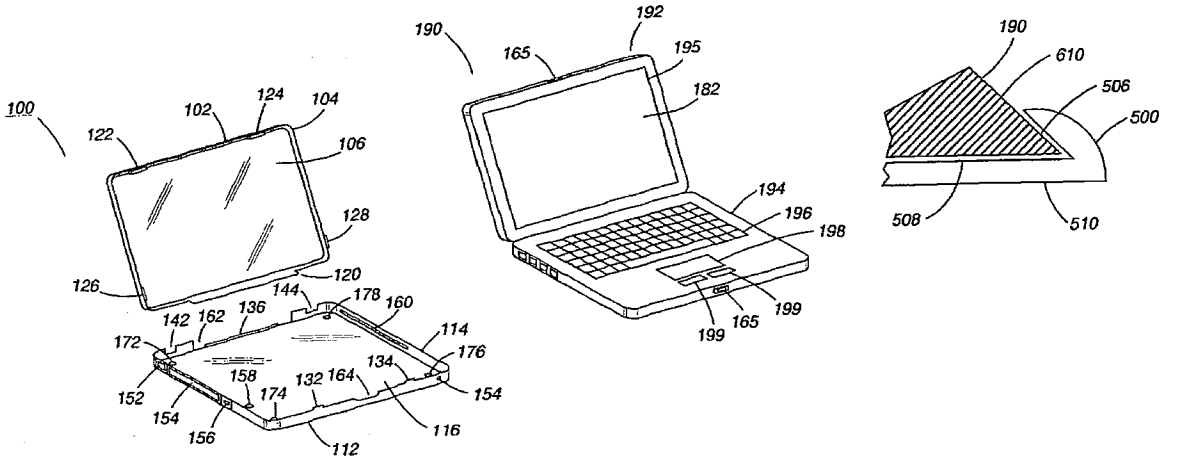
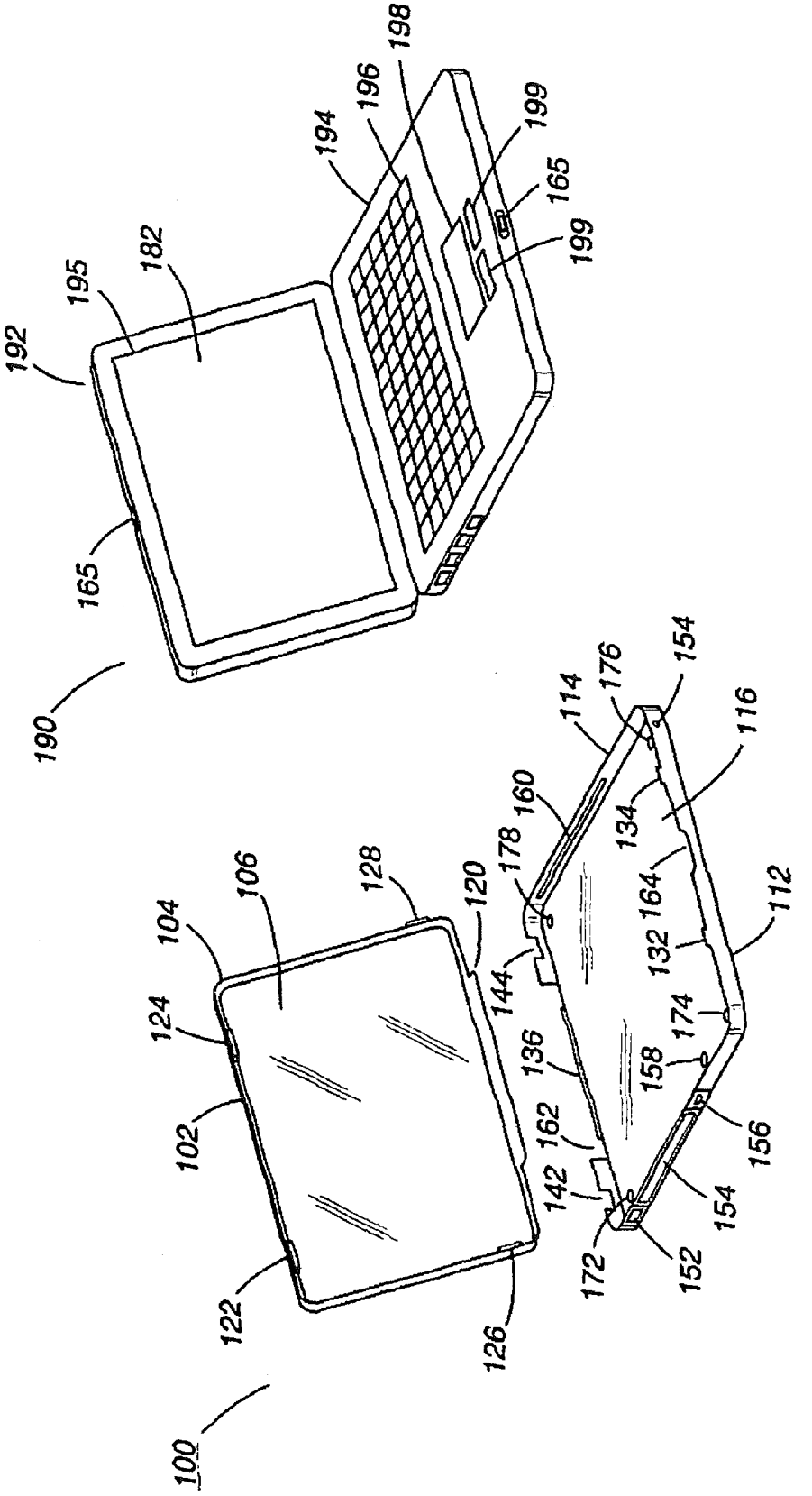
(57) **ABSTRACT**

An exterior cover for a laptop computer having a display portion and a keyboard portion is disclosed. The exterior cover includes a first rigid planar element for placement on an outside surface of the display portion. The first rigid planar element includes a raised edge along a perimeter of the first rigid planar element, wherein the raised edge extends toward the display portion. The first rigid planar element further includes a plurality of tabs located on the raised edge, wherein each tab extends from the raised edge for gripping the display portion. The exterior cover further includes a second rigid planar element for placement on an outside surface of the keyboard portion. The second rigid planar element includes a raised edge extending toward the keyboard portion. The second rigid planar element further includes a plurality of tabs for gripping the keyboard portion.

53 Claims, 4 Drawing Sheets

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128
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100

FIG. 1

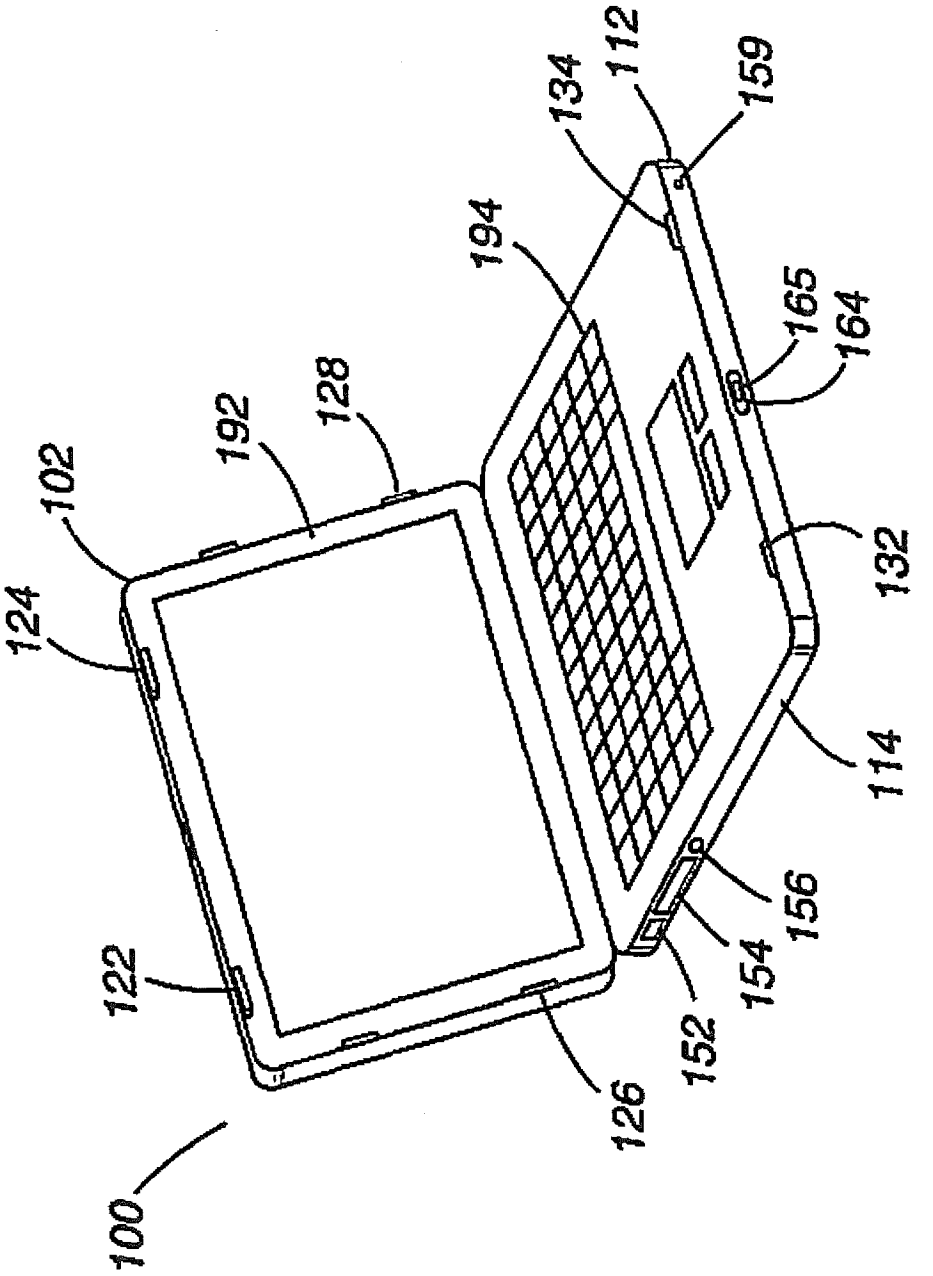
100
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FIG. 2

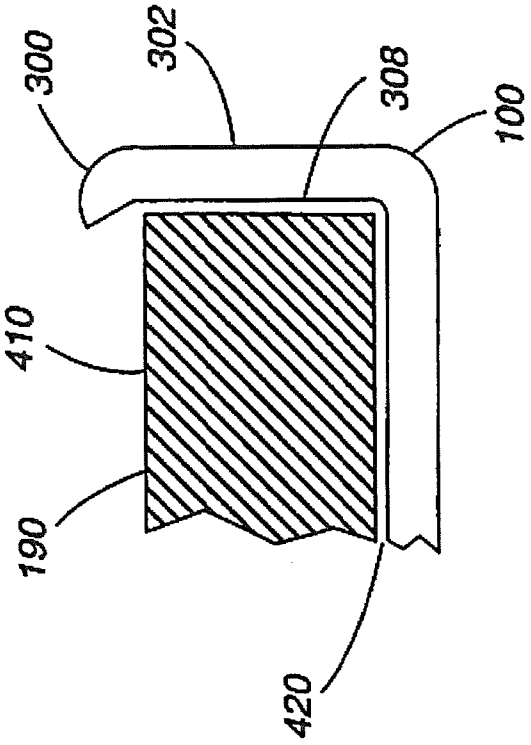

FIG. 4

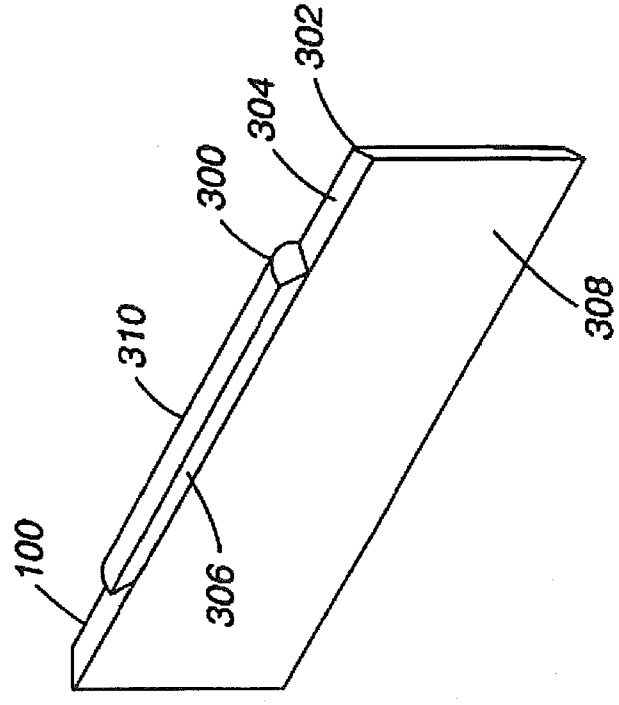

FIG. 3

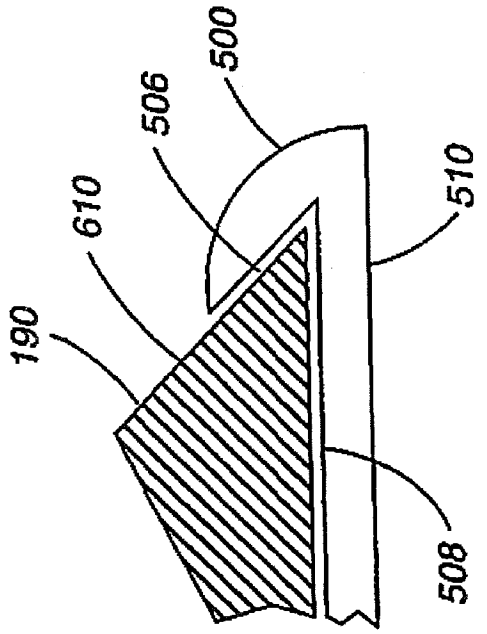

FIG. 6

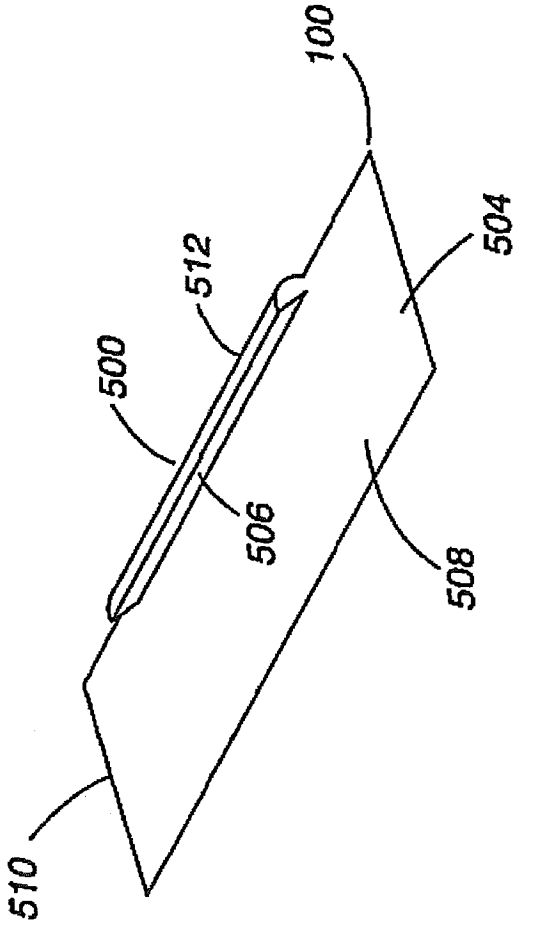

FIG. 5

PROTECTIVE COVER FOR LAPTOP COMPUTER

CROSS-REFERENCE TO RELATED APPLICATIONS

This utility patent application is a continuation of, and claims priority to, patent application Ser. No. 11/788,329, filed Apr. 19, 2007 now U.S. Pat. No. 7,643,274 and entitled "Protective Cover for Laptop Computer." Patent application Ser. No. 11/788,329 claims priority to provisional patent application Ser. No. 60/745,323 filed Apr. 21, 2006 and entitled "Protective Hard Plastic Case for Laptops." Provisional patent application Ser. No. 60/745,323 and patent application Ser. No. 11/788,329 are hereby incorporated by reference in their entirety.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not Applicable.

INCORPORATION BY REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC

Not Applicable.

FIELD OF THE INVENTION

This invention relates to accessories for personal computers, and more particularly to protective accessories for laptop personal computers.

BACKGROUND OF THE INVENTION

As computers become more ubiquitous and as individuals become more mobile, laptop computer sales are on the rise. Individuals are increasingly requiring computing capabilities and information on the go. As such, today it is customary to walk into a coffee shop or a library only to see large groups of individuals sitting at tables doing work, playing games, listening to music or reading on their laptops. Laptops can be more expensive than desktop computers due to the lighter materials, lower voltage parts and mobile components that comprise the laptop computer. For this reason, individuals are typically protective of their laptops, leading to the rise of the laptop accessory industry.

One problem that users often encounter with laptop computers is wear and tear on the exterior of the laptop. Since users often carry around their laptops and use them in cafes, restaurants, libraries, on the floor, in a car, on a subway or in any location not intended for computer use, it is inevitable that the exterior of the laptop will be scratched, dinged, dented, cracked, broken, stained, etc. Since most laptop exteriors are comprised of plastic, there is little one can do to fix such blemishes.

One approach to this problem has been to create laptop covers that comprise mostly a sleeve into which the laptop is inserted while it sin the closed position. This approach solves the problem of protecting the laptop while it is stored away, but does not solve the problem of protecting the laptop while it is in use. This approach, furthermore, requires that the user has to remove the laptop from the protective sleeve before every use, adding another step to the process of preparing the laptop for use, which can be a turnoff for users that are continually moving and lacking time.

Another problem that users often encounter with laptop computers is overheating of the bottom of the laptop. The power supply components of laptops are located on the bottom surface of the keyboard portion of the laptop. During long periods of use, the bottom of the laptop can overheat and burn or cause discomfort to the user if the laptop is sitting on his or her lap. Further, a user's genitalia are near the lap region of an individual and there are health hazards associated with overheating of the scrotum or the vagina. When testicles are exposed to exorbitant heat over long periods of time, for example, an individual's fertility can be affected. Additionally, if a laptop is resting on top of a piece of furniture, such as a table or a desk, an overheating laptop can cause damage to the surface of the furniture.

Therefore, a need exists to overcome the problems with the prior art as discussed above, and particularly for a more efficient way to protect the exterior of laptop computers and to manage the heat generated by the laptop computer during use.

SUMMARY OF THE INVENTION

Briefly, in accordance with one embodiment of the present invention, an exterior cover for a laptop computer having a display portion and a keyboard portion is disclosed. The exterior cover includes a first rigid planar element for placement on an outside surface of the display portion. The first rigid planar element includes a raised edge along a perimeter of the first rigid planar element, wherein the raised edge extends toward the display portion. The first rigid planar element further includes a plurality of tabs located on the raised edge, wherein each tab extends from the raised edge for gripping the display portion. The exterior cover further includes a second rigid planar element for placement on an outside surface of the keyboard portion. The second rigid planar element includes a raised edge along a perimeter of the second rigid planar element, wherein the raised edge extends toward the keyboard portion. The second rigid planar element further includes a plurality of tabs located on the raised edge, wherein each tab extends from the raised edge for gripping the keyboard portion.

In another embodiment of the present invention, an exterior cover for a laptop computer having a display portion and a keyboard portion is disclosed. The exterior cover includes a first rigid planar element having a rectangular shape for covering a top surface of the display portion. The first rigid planar element includes a raised edge for covering a section of all sides of the display portion. The first rigid planar element further includes a plurality of tabs located on the raised edge, wherein each tab extends from the raised edge for gripping the display portion. The exterior cover further includes a second rigid planar element having a rectangular shape for covering a bottom surface of the keyboard portion. The second rigid planar element includes a raised edge for covering a section of all sides of the keyboard portion. The second rigid planar element further includes a plurality of tabs located on the raised edge, wherein each tab extends from the raised edge for gripping the keyboard portion.

In another embodiment of the present invention, a protective cover for a laptop computer is disclosed. The protective cover includes a first rectangular sheet comprised of a rigid material for fastening to an outside surface of a display portion of the laptop computer. The first rectangular sheet includes a plurality of protruding tabs located on opposing sides of the first rectangular sheet, wherein the plurality of tabs extend toward the display portion for gripping the display portion. The protective cover further includes a second rectangular sheet comprised of a rigid material for fastening

to an outside surface of a keyboard portion of the laptop computer. The second rectangular sheet includes a plurality of protruding tabs located on opposing sides of the second rectangular sheet, wherein the plurality of tabs extend toward the keyboard portion for gripping the keyboard portion.

The foregoing and other features and advantages of the present invention will be apparent from the following more particular description of the preferred embodiments of the invention, as illustrated in the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

The subject matter, which is regarded as the invention, is particularly pointed out and distinctly claimed in the claims at the conclusion of the specification. The foregoing and other features and also the advantages of the invention will be apparent from the following detailed description taken in conjunction with the accompanying drawings. Additionally, the left-most digit of a reference number identifies the drawing in which the reference number first appears.

FIG. **1** is an illustration of a perspective view of the elements comprising the exterior cover for a laptop computer, in accordance with one embodiment of the present invention.

FIG. **2** is an illustration of a perspective view of the exterior cover of FIG. **1**, after application to a laptop computer.

FIG. **3** is a perspective detail view of a first tab for securing a rigid planar sheet of the exterior cover to a laptop computer, in accordance with one embodiment of the present invention.

FIG. **4** is a cross-sectional detail view of the first tab for securing a rigid planar sheet of the exterior cover to a laptop computer, in accordance with one embodiment of the present invention.

FIG. **5** is a perspective detail view of a second tab for securing a rigid planar sheet of the exterior cover to a laptop computer, in accordance with one embodiment of the present invention.

FIG. **6** is a cross-sectional detail view of the second tab for securing a rigid planar sheet of the exterior cover to a laptop computer, in accordance with one embodiment of the present invention.

DETAILED DESCRIPTION

It should be understood that these embodiments are only examples of the many advantageous uses of the innovative teachings herein. In general, statements made in the specification of the present application do not necessarily limit any of the various claimed inventions. Moreover, some statements may apply to some inventive features but not to others. In general, unless otherwise indicated, singular elements may be in the plural and vice versa with no loss of generality. In the drawing like numerals refer to like parts through several views.

The present invention, according to a preferred embodiment, overcomes problems with the prior art by providing a rigid exterior cover for laptop computers, wherein the exterior cover comprises one separate piece for applying to the outside surface of the display portion of the laptop computer and a second separate piece for applying to the outside surface of the keyboard portion of the laptop computer. The present invention further solves problems with the prior art by providing an exterior cover that simply snaps onto the laptop computer using a plurality of tabs that are pushed into place around the laptop by applying manual pressure, thereby allowing for easy and fast application and removal. Further, the present invention solves problems with the prior art by providing an exterior laptop cover that dissipates the heat created by the bottom of the laptop computer during use, thereby eliminating or reducing the negative effects of an over-heated laptop computer on individuals and furniture.

FIG. **1** is an illustration of a perspective view of the elements comprising the exterior cover **100** for a laptop computer **190**, in accordance with one embodiment of the present invention. FIG. **1** shows a laptop computer **190** having a display portion **192**, which includes a liquid crystal display **195** or other form of computer display, and a keyboard portion **194**, which includes a keyboard **196**, a touch pad **198**, and buttons **199**. The display portion **192** comprises an inside surface **182** and an outside surface (not shown) located on the opposite as the inside surface **182**. Likewise, the keyboard portion **194** includes an inside surface **184** and an outside surface (not shown) located on the opposite as the inside surface **184**.

FIG. **1** further shows a separate, or independent, rigid planar sheet **102** for applying to the outside surface of the display portion **192** of the laptop computer **190**. The rigid planar sheet **102** may be substantially rectangular with rounded corners. The rigid planar sheet **102** may further include a raised edge **104** disposed around the circumference or perimeter of the rigid planar sheet **102**, wherein the raised edge **104** extends perpendicularly from the rigid planar sheet **102** and extends toward the inside surface **106** of the rigid planar sheet **102**.

Rigid planar sheet **102** may further include a plurality of tabs **122**, **124**, **126**, **128** located along the raised edge **104** of the rigid planar sheet **102**. Each of the plurality of tabs **122**, **124**, **126**, **128** may extend higher than the raised edge **104**. Additionally, each of the plurality of tabs **122**, **124**, **126**, **128** may include a protruding element that extends perpendicularly from the raised edge **104** towards the inside surface **106** of the rigid planar sheet **102**. More detail on the protruding element of each tab is provided below with reference to FIGS. **3-6**. The use of tabs allows for the rigid planar sheet **102** to snap onto the display portion **192** of the laptop computer **190** by applying manual pressure, thereby allowing for easy and fast application and removal of the rigid planar sheet **102**.

Note that two tabs **122**, **124** are located along a top of the rigid planar sheet **102**, while one tab **126** is located on a left side of the rigid planar sheet **102** and one tab **128** is located on a right side of the rigid planar sheet **102**. Also note that tabs **126** and **128** are located on opposite ends of the rigid planar sheet **102** so as to provide pressure in opposite directions towards the center of the display portion **192** when applied. This pressure secures the rigid planar sheet **102** into the display portion **192**.

The raised edge **104** disposed around the circumference or perimeter of the rigid planar sheet **102** covers at least a portion of the sides of the display portion **192** when applied. FIG. **1** further shows a super raised edge **120** located along the bottom of the rigid planar sheet **102**, wherein the super raised edge **120** is raised higher than the raised edge **104**.

FIG. **1** further shows a separate, or independent, rigid planar sheet **112** for applying to the outside surface of the keyboard portion **194** of the laptop computer **190**. The rigid planar sheet **112** may be substantially rectangular with rounded corners. The rigid planar sheet **112** may further include a raised edge **114** disposed around at least a portion of the circumference or perimeter of the rigid planar sheet **112**, wherein the raised edge **114** extends perpendicularly from the rigid planar sheet **112** and extends toward the inside surface **116** of the rigid planar sheet **112**.

Rigid planar sheet **112** may further include a plurality of tabs **132**, **134**, **136** located along the raised edge **114** of the rigid planar sheet **112**. Each of the plurality of tabs **132**, **134**, **136** may extend higher than the raised edge **114**. Additionally,

each of the plurality of tabs **132**, **134**, **136** may include a protruding element that extends perpendicularly from the raised edge **114** towards the inside surface **116** of the rigid planar sheet **112**. More detail on the protruding element of each tab is provided below with reference to FIGS. **3-6**. The use of tabs allows for the rigid planar sheet **112** to snap onto the keyboard portion **194** of the laptop computer **190** by applying manual pressure, thereby allowing for easy and fast application and removal of the rigid planar sheet **112**.

Note that two tabs **132**, **134** are located along a bottom of the rigid planar sheet **112**, while one tab **136** is located on a top side of the rigid planar sheet **112**. Also note that tabs **132**, **134** are located on opposite ends of the rigid planar sheet **112** as tab **136** so as to provide pressure in opposite directions towards the center of the keyboard portion **194** when applied. This pressure secures the rigid planar sheet **112** into the keyboard portion **194**.

The raised edge **114** of rigid planar sheet **112** includes lower or retracted portions **142**, **144** located along a top of the rigid planar sheet **112**. These retracted portions **142**, **144** are not raised as high as the raised edge **114** and either provide an open area for a movable part, such as a hinge connecting the keyboard portion **194** with display portion **192**, or provide access to a portion of the keyboard portion **194**, such as a power connection, a light, a data port, a button or a removable media drive.

The raised edge **114** of rigid planar sheet **112** further includes shaped orifices **152**, **154**, **156** located along a left side of the rigid planar sheet **112**. These shaped orifices **152**, **154**, **156** provide access to a portion of the keyboard portion **194**, such as a power connection, a light, a data port, a button or a removable media drive. Also note shaped orifice **158** (for air circulation) located along the rigid planar sheet **112**, shaped orifice **159** located along a bottom side of the raised edge **114** and shaped orifice **160** located along a right side of the raised edge **114**. These shaped orifices **152**, **154**, **156**, **158**, **159**, **160** provide access to a portion of the keyboard portion **194**, such as a power connection, a light, a data port, a button or a removable media drive. For example, orifice **160** may provide access to a CD/DVD drive while orifice **159** may provide access to an LED light. Note that each orifice is shaped according to the shape of the item to which it is providing access.

The raised edge **114** disposed around the circumference or perimeter of the rigid planar sheet **112** covers at least a portion of the sides of the keyboard portion **194** when applied. FIG. **1** further shows an area **162** located along the top of the rigid planar sheet **112** wherein the raised edge **114** is either lower or non-existent. Area **162** may provide an open area for a movable part, such as a hinge connecting the keyboard portion **194** with display portion **192**. Also note lower edge **164**, which is lower than raised edge **114**. Lower edge **164** may provide access to a mechanism **165**, such as a latch, for opening or closing the laptop computer **190**.

Lastly, note depressions **172**, **174**, **176**, **178** located on the rigid planar sheet **112**. The depressions **172**, **174**, **176**, **178** are located near the corners of the rectangular rigid planar sheet **112**. Each depression **172**, **174**, **176**, **178** causes a protrusion on the opposite side (not shown) of the rigid planar sheet **112**. A "foot" or elastic, pill-shaped element (comprised of rubber or plastic) may be adhered to the protrusion on the opposite side (not shown) of the rigid planar sheet **112**, so as to protect furniture or any surface from scratching or damage when the rigid planar sheet **112** is placed on it.

Rigid planar sheets **102** and **112** may be manufactured from a variety of materials including metal, such as stainless steel, titanium, aluminum or any metal alloy, rigid fabric, carbon fiber, epoxy resin, graphite, rubber, plastic or any combination of the above.

Plastic covers a range of synthetic or semi-synthetic polymerization products. Plastics are composed of organic condensation or addition polymers and may contain other substances to improve performance or economics. In the present invention, plastic may comprise any one of the following forms of plastic: polyethylene, polystyrene, high impact polystyrene, polyethylene terephthalate, nylon, polypropylene, acrylonitrile butadiene styrene (ABS), bayblend and polyvinylidene chloride (PVC).

The rigid planar sheets **102** and **112** may be manufactured of the present invention can be manufactured from a plastic compound using any variety of processes, such as injection molding, fusible core injection molding and thermoforming.

Injection molding is a manufacturing technique for making parts from thermoplastic material in production. Molten plastic is injected at high pressure into a mold, which is the inverse of the product's shape. After a product is designed by an industrial designer, molds are made by a mold-maker from metal, usually either steel or aluminum, and precision-machined to form the features of the desired part. Injection molding is widely used for manufacturing a variety of parts and is the most common method of plastic production.

The most commonly used thermoplastic materials are polystyrene, ABS or acrylonitrile butadiene styrene, nylon, polypropylene, polyethylene, and polyvinyl chloride or PVC.

Injection molding machines, also known as presses, hold the molds in which the components are shaped. Presses are rated by tonnage, which expresses the amount of clamping force that the machine can generate. This pressure keeps the mould closed during the injection process.

Molds separate into at least two halves (called the core and the cavity) to permit the plastic part to be extracted. In general, the shape of a part must not cause it to be locked into the mould. For example, sides of objects typically cannot be parallel with the direction of draw (the direction in which the core and cavity separate from each other). They are angled slightly. Pins are the most popular method of removal from the core, but air ejection, and stripper plates can also be used depending on the application. Most ejection plates are found on the moving half of the tool, but they can be placed on the fixed half.

Molds are built through two main methods: standard machining and EDM machining. Standard machining, in its conventional form, has historically been the method of building injection molds. With technological development, computer numerical control (CNC) machining became the predominant means of making more complex molds with more accurate mold details in less time than traditional methods.

The electrical discharge machining (EDM) or spark erosion process has become widely used in mold making. EDM is a simple process in which a shaped electrode, usually made of copper or graphite, is very slowly lowered onto the mould surface (over a period of many hours), which is immersed in paraffin oil. A voltage applied between tool and mould causes erosion of the mould surface in the inverse shape of the electrode.

Fusible core injection molding or lost core injection molding is a specialized plastic injection molding process. It is used in the manufacture of molded components with cavities or undercuts, which would not be possible with tools having demoldable cores. The process consists of three essential steps. First, a core consisting of a low melting point metal is poured in the shape of the cavity specified for the molded component. This is inserted into the injection mold in the

second step and injected with plastic. Molded component and core are both demolded and, in the third step, immersed in a heated bath to melt out the core. The bath temperature is selected to be somewhat higher than that of the core alloy's melting point, but not so that the injected part would be damaged. Induction heating of the core metal in the heated bath reduces the melt out time to a few minutes. Liquid core metal collects on the bottom of the heated bath and is usable for a new core.

Thermoforming is a manufacturing process for thermoplastic sheet or film. The sheet or film is heated between infrared, natural gas, or other heaters to its forming temperature. Then it is stretched over or into a temperature-controlled, single-surface mold. Cast or machined aluminum is the most common mold material, although epoxy and wood tooling are sometime used for low volume production. The sheet is held against the mold surface unit until cooled. The formed part is then trimmed from the sheet. The trimmed material is usually reground, mixed with virgin plastic, and reprocessed into a usable sheet. There are several categories of thermoforming, including vacuum forming, pressure forming, twin-sheet forming, drape forming, free blowing, and simple sheet bending.

In one embodiment of the present invention, rigid planar sheets **102** and **112** may be manufactured from a material that is a solid color (or multiple solid colors), a transparent color (or multiple transparent colors) or may include a pattern or other series of multiple colors in a variety of selections. In another embodiment of the present invention, rigid planar sheets **102** and **112** may include graphics, designs, logos, pictures, or any images that can be applied to the planar sheets. The graphics may be embedded in the material comprising the rigid planar sheets **102** and **112** or the graphics may be stamped, painted, stenciled, laser etched, printed, engraved or silk-screened onto the exterior or interior surfaces of the planar sheets.

In one embodiment of the present invention, rigid planar sheets **102** and **112** may be manufactured from a material that dissipates or insulates the heat created by the laptop **190** during use. The material used to manufacture the rigid planar sheets **102** and **112**, such as plastic, may possess heat isolative properties that prevent the outside surface of the exterior cover **100** from overheating. Alternatively, the material used to manufacture the rigid planar sheets **102** and **112**, such as metal, may possess heat conductive properties that quickly dissipate the heat originating from the laptop **190**. Alternatively, the material used to manufacture the rigid planar sheets **102** and **112** may possess any combination of heat insulating and heat conducting properties so as to accomplish the goal of re-directing the heat emanating from the use of the laptop **190** so as not to be directed downwards towards the bottom of the laptop. Such redirection of the laptop heat is beneficial as it reduces or eliminates the negative implications of high temperatures along the bottom of a laptop, including overheating or burning of a person's lap when the laptop is sitting on top of a user's lap and overheating of a table, desk or other furniture, thereby leading to damaged furniture.

Furthermore, shaped orifices **152, 154, 156, 158, 159, 160** may provide access to a space **420** (see FIG. **4**) between the rigid planar sheet **112** and the keyboard portion **194**. This space **420** may provide an area for heat convection wherein air is the medium. As the bottom of the keyboard portion **194** is heated, the air in the space **420** is heated while cooler air enters the space **420** via orifice **158** (among others). As relatively hot air rises, so does the heated air move towards the top of the keyboard portion **194** to escape as cooler air rushes upwards into space **420** to fill the void. In this way, the temperature of the bottom of the keyboard portion **194** is regulated by heat convection so as not to overheat.

FIG. **2** is an illustration of a perspective view of the exterior cover **100** of FIG. **1**, after application to the laptop computer **190**. Note that rigid planar sheet **102** has been applied to the display portion **192** and rigid planar sheet **112** has been applied to the keyboard portion **194**. Note also that the rigid planar sheets **102** and **112** can be applied to the laptop **190** while the laptop is either in the open or closed position. The plurality of tabs **122, 124, 126, 128** of the rigid planar sheet **102**, each having a protruding element, allow for the rigid planar sheet **102** to snap onto the display portion **192** of the laptop computer **190** by applying manual pressure, thereby allowing for easy and fast application and removal of the rigid planar sheet **102**. Tabs **126** and **128** are located on opposite ends of the rigid planar sheet **102** so as to provide pressure in opposite directions towards the center of the display portion **192** when applied. This pressure secures the rigid planar sheet **102** into the display portion **192**.

The plurality of tabs **132, 134** and **136** (not shown) of the rigid planar sheet **112**, each having a protruding element, allow for the rigid planar sheet **112** to snap onto the keyboard portion **194** of the laptop computer **190** by applying manual pressure, thereby allowing for easy and fast application and removal of the rigid planar sheet **112**. Tabs **132, 134** are located on opposite ends of the rigid planar sheet **102** as tab **136**, so as to provide pressure in opposite directions towards the center of the keyboard portion **194** when applied. This pressure secures the rigid planar sheet **112** into the keyboard portion **194**.

The rigid planar sheet **112** includes shaped orifices **152, 154, 156** located along a left side of the rigid planar sheet **112**, the orifices providing access to a portion of the keyboard portion **194**, such as a power connection, a light, a data port, a button or a removable media drive. Also note shaped orifice **159** located along a bottom side of the raised edge **114**. These shaped orifices **152, 154, 156, 159** provide access to a portion of the keyboard portion **194**, such as a power connection, a light, a data port, a button or a removable media drive. Note that each orifice is shaped according to the shape of the item to which it is providing access. Also note lower edge **164**, which may provide access to a mechanism **165**, such as a latch, for opening or closing the laptop computer **190**.

FIG. **3** is a perspective detail view of a first tab **300** for securing a rigid planar sheet of the exterior cover **100** to a laptop computer **190**, in accordance with one embodiment of the present invention. The first tab **300** may describe tabs **122, 124, 126, 128 132, 134** of FIG. **1** in more detail. FIG. **3** shows that first tab **300** is attached to a top surface **304** of raised edge **302**, analogous to raised edge **104** or **114**. The first tab **300** includes a flat surface **306** that slopes inward or extends toward the inside surface **308** of the edge **302**. The flat surface **306** connects to the top surface **304** of raised edge **302**. The first tab **300** has a rounded back **310** that curves back away from the surface **306** and connects to the raised edge **302**.

FIG. **4** is a cross-sectional detail view of the first tab **300** for securing a rigid planar sheet of the exterior cover **100** to a laptop computer **190**, in accordance with one embodiment of the present invention. FIG. **4** shows that flat surface **306** of tab **300** slopes inward or extends toward the inside surface **308** of the raised edge **302**. As the laptop **190** is inserted into the exterior cover **100**, the tab **300** may be pushed back or away from the inside surface **308** of the edge **302** so as to allow for the full width of the laptop **190** to be inserted into the exterior cover **100**. The malleable or elastic nature of the material comprising the exterior cover **100**, such as plastic, allows for the tab **300** to be pushed back or away from the inside surface

308 of the edge 302 without breaking the tab 300, while allowing for the tab 300 to return to its initial shape or arrangement after the full width of the laptop 190 is inserted into the exterior cover 100.

FIG. 4 shows that after insertion of the laptop 190 into the exterior cover 100, the flat surface 306 of tab 300 slopes inward toward the laptop, thereby extending over the top surface 410 of the laptop 190 so as to grip the laptop 190. This positioning keeps the laptop 190 from moving upwards and exiting the exterior cover 100 since the tab 300 grips the laptop 190 to secure it in place. Thus, tab 300 secures the laptop 190 within the exterior cover 100. The application of enough force, however, may force the tab 300 to be pushed back or away from the inside surface 308 of the edge 302 so as to allow for the full width of the laptop 190 to exit the exterior cover 100.

FIG. 5 is a perspective detail view of a second tab 500 for securing a rigid planar sheet of the exterior cover 100 to a laptop computer 190, in accordance with one embodiment of the present invention. The second tab 500 may describe tab 136 of FIG. 1 in more detail. FIG. 5 shows that second tab 500 is attached to a top surface 504 of a rigid planar sheet 510, and possible a raised edge (not shown), analogous to raised edge 104 or 114. The second tab 500 includes a flat surface 506 that slopes inward or extends toward the inside surface 508 of the rigid planar sheet 510. The flat surface 506 connects to the top surface 504 of the rigid planar sheet 510 or a raised edge. The second tab 500 has a rounded back 512 that curves back away from the surface 506 and connects to the top surface 504 of the rigid planar sheet 510 or a raised edge.

FIG. 6 is a cross-sectional detail view of the second tab 500 for securing a rigid planar sheet of the exterior cover 100 to a laptop computer 190, in accordance with one embodiment of the present invention. FIG. 6 shows that flat surface 506 of second tab 500 slopes inward or extends toward the inside surface 508 of the rigid planar sheet 510. As the laptop 190 is inserted into the exterior cover 100, the second tab 500 may be pushed back or away from the inside surface 508 of the rigid planar sheet 510 so as to allow for the full width of the laptop 190 to be inserted into the exterior cover 100. The malleable or elastic nature of the material comprising the exterior cover 100, such as plastic, allows for the second tab 500 to be pushed back or away from the inside surface 508 of the rigid planar sheet 510 without breaking the second tab 500, while allowing for the second tab 500 to return to its initial shape or arrangement after the full width of the laptop 190 is inserted into the exterior cover 100.

FIG. 6 shows that after insertion of the pointed protrusion of laptop 190 into the exterior cover 100, the flat surface 506 of second tab 500 slopes inward toward the laptop, thereby extending over the top surface 610 of a pointed protrusion of the laptop 190 so as to grip the laptop 190. This positioning keeps the laptop 190 from moving upwards and exiting the exterior cover 100 since the second tab 500 grips the laptop 190 to secure it in place. Thus, second tab 500 secures the laptop 190 within the exterior cover 100. The application of enough force, however, may force the second tab 500 to be pushed back or away from the inside surface 508 of the rigid planar sheet 510 so as to allow for the full width of the laptop 190 to exit the exterior cover 100.

Although specific embodiments of the invention have been disclosed, those having ordinary skill in the art will understand that changes can be made to the specific embodiments without departing from the spirit and scope of the invention. The scope of the invention is not to be restricted, therefore, to the specific embodiments. Furthermore, it is intended that the appended claims cover any and all such applications, modifications, and embodiments within the scope of the present invention.

I claim:

1. An exterior cover for a laptop computer having a display portion and a keyboard portion, comprising:
- a first elastic planar element for placement on an outside surface of the display portion, the first elastic planar element including:
  - a raised edge along a portion of a perimeter of the first elastic planar element, wherein the raised edge extends perpendicularly from the first elastic planar element and toward the display portion; and
  - a plurality of tabs located on the raised edge, wherein each tab extends from the raised edge over an inside surface of the display portion so as to grip the display portion; and
- a second elastic planar element for placement on an outside surface of the keyboard portion, the second elastic planar element being separate and independent from the first elastic planar element, the second elastic planar element including:
  - a raised edge along a portion of a perimeter of the second elastic planar element, wherein the raised edge extends perpendicularly from the second elastic planar element and toward the keyboard portion; and
  - a plurality of tabs located on the raised edge, wherein each tab extends from the raised edge over an inside surface of the keyboard portion so as to grip the keyboard portion.

2. The exterior cover of claim 1, wherein the exterior cover is comprised of an elastic plastic material.

3. The exterior cover of claim 2, wherein the exterior cover is comprised of a colored, transparent plastic material.

4. The exterior cover of claim 1, wherein the first and second elastic planar elements comprise a substantially rectangular shape.

5. The exterior cover of claim 4, wherein the plurality of tabs of the first elastic planar element comprise four tabs.

6. The exterior cover of claim 5, wherein the plurality of tabs of the second elastic planar element comprise three tabs.

7. The exterior cover of claim 6, wherein the raised edge of the second elastic planar element includes at least one orifice for allowing access to a removable media port in the keyboard portion.

8. The exterior cover of claim 7, wherein each of the plurality of tabs of the first and second elastic planar elements extend from about one millimeter to about two millimeters from the raised edge.

9. An exterior cover for a laptop computer having a display portion and a keyboard portion, comprising:
- a first elastic planar element having a rectangular shape for covering a top surface of the display portion, the first elastic planar element including:
  - a raised edge extending perpendicularly from the first elastic planar element, the raised edge covering a section of all sides of the display portion; and
  - a plurality of tabs located on the raised edge, wherein each tab extends from the raised edge so as to extend over a bottom surface of the display portion, thereby gripping the display portion; and
- a second elastic planar element having a rectangular shape for covering a bottom surface of the keyboard portion, the second elastic planar element being separate and independent from the first elastic planar element, the second elastic planar element including:

a raised edge extending perpendicularly from the second elastic planar element, the raised edge covering a section of all sides of the keyboard portion;

at least one tab extending from the second elastic planar element for gripping the keyboard portion; and

a plurality of tabs located on the raised edge, wherein each tab extends from the raised edge so as to extend over a top surface of the keyboard portion, thereby gripping the keyboard portion.

10. The exterior cover of claim **9**, wherein the exterior cover is comprised of an elastic plastic material.

11. The exterior cover of claim **9**, wherein the each of the plurality of tabs of the first and second elastic planar elements are raised higher than the raised edge of the first and second elastic planar elements, respectively.

12. The exterior cover of claim **11**, wherein the plurality of tabs of the first elastic planar element comprise four tabs.

13. The exterior cover of claim **12**, wherein the plurality of tabs of the second elastic planar element comprise three tabs.

14. The exterior cover of claim **13**, wherein the raised edge of the second elastic planar element includes at least one orifice for allowing access to a removable media port in the keyboard portion.

15. The exterior cover of claim **14**, wherein each of the plurality of tabs of the first and second elastic planar elements extend from about one millimeter to about two millimeters from the raised edge.

16. A protective cover for a laptop computer, comprising:

a first rectangular sheet comprised of an elastic material for fastening to an outside surface of a display portion of the laptop computer, the first rectangular sheet including a plurality of protruding tabs located on opposing sides of the first rectangular sheet, wherein the plurality of tabs extend over an inside surface of the display portion, thereby gripping the display portion; and

a second rectangular sheet comprised of an elastic material for fastening to an outside surface of a keyboard portion of the laptop computer, the second rectangular sheet being separate and independent from the first rectangular sheet, the second rectangular sheet including a plurality of protruding tabs located on opposing sides of the second rectangular sheet, wherein the plurality of tabs extend over an inside surface of the keyboard portion, thereby gripping the keyboard portion.

17. The protective cover of claim **16**, wherein the protective cover is comprised of a heat-dissipating, plastic material.

18. The protective cover of claim **16**, wherein the protective cover is comprised of an elastic plastic material.

19. The protective cover of claim **16**, wherein the protective cover is comprised of an elastic translucent plastic material.

20. The protective cover of claim **16**, wherein each of the plurality of protruding tabs of the first and second rectangular sheets extend from about one millimeter to about two millimeters in length.

21. An exterior cover for a laptop computer having a display portion and a keyboard portion, comprising:

a first elastic planar element having a rectangular shape with rounded corners, the first elastic planar element for placement on an outside surface of the display portion, the first elastic planar element including:

a raised edge located on all four sides of the first elastic planar element, wherein the raised edge extends perpendicularly from the first elastic planar element toward the display portion; and

two or more tabs located on opposing sides of the raised edge, wherein each tab extends from the raised edge, thereby extending over an inside surface of the display portion and gripping the display portion; and

a second elastic planar element having a rectangular shape with rounded corners, the second elastic planar element for placement on an outside surface of the keyboard portion, the second elastic planar element being separate and independent from the first elastic planar element, the second elastic planar element including:

a raised edge located on all four sides of the second elastic planar element, wherein the raised edge extends perpendicularly from the second elastic planar element toward the keyboard portion; and

two or more tabs located on the raised edge, wherein each tab extends from the raised edge, thereby extending over an inside surface of the keyboard portion and gripping the keyboard portion.

22. The exterior cover of claim **21**, further comprising a plurality of rounded protrusions on an exterior surface of the second elastic planar element.

23. The exterior cover of claim **21**, further comprising a single tab extending at an acute angle from the second elastic planar element towards the keyboard portion.

24. The exterior cover of claim **21**, further comprising a plurality of orifices in the second elastic planar element for allowing circulation of air.

25. The exterior cover of claim **21**, further comprising a cutout in the raised edge of the second elastic planar for allowing access to a latch of the laptop.

26. The exterior cover of claim **1**, wherein the junction of the raised edge and the first planar element is a rounded corner.

27. The exterior cover of claim **1**, wherein the junction of the raised edge and the second planar element is a rounded corner.

28. The exterior cover of claim **1**, wherein the plurality of tabs on the raised edge of the first planar element extend perpendicularly from the raised edge.

29. The exterior cover of claim **28**, wherein the plurality of tabs extend over an inside surface of the display portion.

30. The exterior cover of claim **29**, wherein the plurality of tabs grip the inside surface of the display portion.

31. The exterior cover of claim **1**, wherein the plurality of tabs on the raised edge of the second planar element extend perpendicularly from the raised edge.

32. The exterior cover of claim **31**, wherein the plurality of tabs extend over an inside surface of the keyboard portion.

33. The exterior cover of claim **32**, wherein the plurality of tabs grip the inside surface of the keyboard portion.

34. The exterior cover of claim **1**, wherein the plurality of tabs on the raised edge of the first planar element extend from the raised edge at an angle of less than ninety degrees.

35. The exterior cover of claim **1**, wherein the plurality of tabs on the raised edge of the second planar element extend from the raised edge at an angle of less than ninety degrees.

36. The exterior cover of claim **1**, wherein the plurality of tabs on the raised edge of the first planar element extend from the raised edge at an angle of more than ninety degrees.

37. The exterior cover of claim **1**, wherein the plurality of tabs on the raised edge of the second planar element extend from the raised edge at an angle of more than ninety degrees.

38. The exterior cover of claim **1**, wherein the keyboard portion comprises a QWERTY keyboard.

39. An exterior cover for a laptop computer including a display portion and a keyboard portion, comprising:

a first elastic planar element for placement on an outside surface of the display portion, the first elastic planar element comprises a raised edge along a portion of a

perimeter of the first elastic planar element and a tab on the raised edge, wherein the tab extends over an inside surface of the display portion; and

a second elastic planar element for placement on an outside surface of the keyboard portion, the second elastic planar element being separate and independent from the first elastic planar element, the second elastic planar element comprises a raised edge along a portion of a perimeter of the second elastic planar element and a tab on the raised edge, wherein the tab extends over an inside surface of the keyboard portion.

40. The exterior cover of claim **9**, wherein the plurality of tabs on the raised edge of the first planar element extend from the raised edge at an angle of less than ninety degrees.

41. The exterior cover of claim **9**, wherein the plurality of tabs on the raised edge of the second planar element extend from the raised edge at an angle of less than ninety degrees.

42. The exterior cover of claim **9**, wherein the plurality of tabs on the raised edge of the first planar element extend from the raised edge at an angle of more than ninety degrees.

43. The exterior cover of claim **9**, wherein the plurality of tabs on the raised edge of the second planar element extend from the raised edge at an angle of more than ninety degrees.

44. The exterior cover of claim **9**, wherein the keyboard portion comprises a QWERTY keyboard.

45. The protective cover of claim **16**, further comprising a raised edge that extends perpendicularly from the first planar element.

46. The protective cover of claim **16**, further comprising a raised edge that extends perpendicularly from the second planar element.

47. The protective cover of claim **16**, wherein the plurality of tabs of the first planar element extend perpendicularly from the raised edge.

48. The protective cover of claim **16**, wherein the plurality of tabs of the second planar element extend perpendicularly from the raised edge.

49. The protective cover of claim **16**, wherein the plurality of tabs of the first planar element extend from the raised edge at an angle of less than ninety degrees.

50. The protective cover of claim **16**, wherein the plurality of tabs of the second planar element extend from the raised edge at an angle of less than ninety degrees.

51. The protective cover of claim **16**, wherein the plurality of tabs of the first planar element extend from the raised edge at an angle of more than ninety degrees.

52. The protective cover of claim **16**, wherein the plurality of tabs of the second planar element extend from the raised edge at an angle of more than ninety degrees.

53. The protective cover of claim **16**, wherein the keyboard portion comprises a QWERTY keyboard.

* * * * *

35 U.S.C. § 103. Conditions for patentability; non-obvious subject matter

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

(b)

(1) Notwithstanding subsection (a), and upon timely election by the applicant for patent to proceed under this subsection, a biotechnological process using or resulting in a composition of matter that is novel under section 102 and nonobvious under subsection (a) of this section shall be considered nonobvious if—

(A) claims to the process and the composition of matter are contained in either the same application for patent or in separate applications having the same effective filing date; and

(B) the composition of matter, and the process at the time it was invented, were owned by the same person or subject to an obligation of assignment to the same person.

(2) A patent issued on a process under paragraph (1)—

(A) shall also contain the claims to the composition of matter used in or made by that process, or

(B) shall, if such composition of matter is claimed in another patent, be set to expire on the same date as such other patent, notwithstanding section 154.

(3) For purposes of paragraph (1), the term "biotechnological process" means—

(A) a process of genetically altering or otherwise inducing a single- or multi-celled organism to—

(i) express an exogenous nucleotide sequence,
(ii) inhibit, eliminate, augment, or alter expression of an endogenous nucleotide sequence, or
(iii) express a specific physiological characteristic not naturally associated with said organism;

(B) cell fusion procedures yielding a cell line that expresses a specific protein, such as a monoclonal antibody; and

(C) a method of using a product produced by a process defined by subparagraph (A) or (B), or a combination of subparagraphs (A) and (B).

(c)

(1) Subject matter developed by another person, which qualifies as prior art only under one or more of subsections (e), (f), and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the claimed invention was made, owned by the same person or subject to an obligation of assignment to the same person.

(2) For purposes of this subsection, subject matter developed by another person and a claimed invention shall be deemed to have been owned by the same person or subject to an obligation of assignment to the same person if—

(A) the claimed invention was made by or on behalf of parties to a joint research agreement that was in effect on or before the date the claimed invention was made;

(B) the claimed invention was made as a result of activities undertaken within the scope of the joint research agreement; and

(C) the application for patent for the claimed invention discloses or is amended to disclose the names of the parties to the joint research agreement.

(3) For purposes of paragraph (2), the term "joint research agreement" means a written contract, grant, or cooperative agreement entered into by two or more persons or entities for the performance of experimental, developmental, or research work in the field of the claimed invention.

2143 Examples of Basic Requirements of a Prima Facie Case of Obviousness [R-9]

The Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1395-97 (2007) identified a number of rationales to support a conclusion of obviousness which are consistent with the proper "functional approach" to the determination of obviousness as laid down in *Graham*. The key to supporting any rejection under 35 U.S.C. **103** is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR* noted that the analysis supporting a rejection under 35 U.S.C. **103** should be made explicit. > In *Ball Aerosol v. Limited Brands*, 555 F.3d 984 (Fed. Cir. 2009), the Federal Circuit offered additional instruction as to the need for an explicit analysis. The Federal Circuit explained that the Supreme Court's requirement for an explicit analysis does not require record evidence of an explicit teaching of a motivation to combine in the prior art.

[T]he analysis that "should be made explicit" refers not to the teachings in the prior art of a motivation to combine, but to the court's analysis. . . . Under the flexible inquiry set forth by the Supreme Court, the district court therefore erred by failing to take account of "the inferences and creative steps," or even routine steps, that an inventor would employ and by failing to find a motivation to combine related pieces from the prior art.

Ball Aerosol, 555 F.3d at 993. The Federal Circuit's directive in *Ball Aerosol* was addressed to a lower court, but it applies to Office personnel as well. When setting forth a rejection, Office personnel are to continue to make appropriate findings of fact as explained in **MPEP § 2141** and **§ 2143**, and must provide a reasoned explanation as to why the invention as claimed would have been obvious to a person of ordinary skill in the art at the time of the invention. This requirement for explanation remains even in situations in which Office personnel may properly rely on intangible realities such as common sense and ordinary ingenuity. <

EXEMPLARY RATIONALES

Exemplary rationales that may support a conclusion of obviousness include:

(A) Combining prior art elements according to known methods to yield predictable results;
(B) Simple substitution of one known element for another to obtain predictable results;
(C) Use of known technique to improve similar devices (methods, or products) in the same way;
(D) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;
(E) "Obvious to try" – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;
(F) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art;
(G) Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

Note that the list of rationales provided is not intended to be an all-inclusive list. Other rationales to

support a conclusion of obviousness may be relied upon by Office personnel. Any rationale employed must provide a link between the factual findings and the legal conclusion of obviousness.

It is important for Office personnel to recognize that when they do choose to formulate an obviousness rejection using one of the rationales suggested by the Supreme Court in KSR and discussed herein, they are to adhere to the guidance provided regarding the necessary factual findings. It remains Office policy that appropriate factual findings are required in order to apply the enumerated rationales properly.

The subsections below include discussions of each rationale along with examples illustrating how the cited rationales may be used to support a finding of obviousness. > Some examples use the facts of pre-KSR cases to show how the rationales suggested by the Court in KSR may be used to support a finding of obviousness. < The cases cited (from which the facts were derived) may not necessarily stand for the proposition that the particular rationale is the basis for the court's holding of obviousness > , but they do illustrate consistency of past decisions with the lines of reasoning laid out in KSR. Other examples are post-KSR decisions that show how the Federal Circuit has applied the principles of KSR. Cases are included that illustrate findings of obviousness as well as nonobviousness. < Note that, in some instances, a single case is used in different subsections to illustrate the use of more than one rationale to support a finding of obviousness. It will often be the case that, once the *Graham* inquiries have been satisfactorily resolved, a conclusion of obviousness may be supported by more than one line of reasoning.

A. Combining Prior Art Elements According to Known Methods To Yield Predictable Results

To reject a claim based on this rationale, Office personnel must resolve the *Graham* factual inquiries. Then, Office personnel must articulate the following:

> (1) a finding that the prior art included each element claimed, although not necessarily in a single prior art reference, with the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference;
> (2) a finding that one of ordinary skill in the art could have combined the elements as claimed by known methods, and that in combination, each element merely performs the same function as it does separately;
> (3) a finding that one of ordinary skill in the art would have recognized that the results of the combination were predictable; and
> (4) whatever additional findings based on the *Graham* factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness.

The rationale to support a conclusion that the claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination yielded nothing more than predictable results to one of ordinary skill in the art. *KSR*, 550 U.S. at ___, 82 USPQ2d at 1395; *Sakraida v. AG Pro, Inc.*, 425 U.S. 273, 282, 189 USPQ 449, 453 (1976); *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57, 62-63, 163 USPQ 673, 675 (1969); *Great Atlantic & P. Tea Co. v. Supermarket Equipment Corp.*, 340 U.S. 147, 152, 87 USPQ 303, 306 (1950). "[I]t can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." *KSR*, 550 U.S. at ___, 82 USPQ2d at 1396. If any of these findings cannot be made, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art.

Example 1:

The claimed invention in *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57, 163 USPQ 673 (1969) was a paving machine which combined several well-known elements onto a single chassis. Standard prior art paving machines typically combined equipment for spreading and shaping asphalt onto a single chassis. The patent claim included the well-known element of a radiant-heat burner attached to the side of the paver for the purpose of preventing cold joints during continuous strip paving. The prior art used radiant heat for softening the asphalt to make patches, but did not use radiant heat burners to achieve continuous strip paving. All of the component parts were known in the prior art. The only difference was the combination of the "old elements" into a single device by mounting them on a single chassis. The Court found that the operation of the heater was in no way dependent on the operation of the other equipment, and that a separate heater could also be used in conjunction with a standard paving machine to achieve the same results. The Court concluded that "[t]he convenience of putting the burner together with the other elements in one machine, though perhaps a matter of great convenience, did not produce a 'new' or 'different function'" and that to those skilled in the art the use of the old elements in combination would have been obvious. *Id.* at 60, 163 USPQ at 674.

Note that combining known prior art elements is not sufficient to render the claimed invention obvious if the results would not have been predictable to one of ordinary skill in the art. *United States v. Adams*, 383 U.S. 39, 51-52, 148 USPQ 479, 483-84 (1966). In *Adams*, the claimed invention was to a battery with one magnesium electrode and one cuprous chloride electrode that could be stored dry and activated by the addition of plain water or salt water. Although magnesium and cuprous chloride were individually known battery components, the Court concluded that the claimed battery was nonobvious. The Court stated that "[d]espite the fact that each of the elements of the Adams battery was well known in the prior art, to combine them as did Adams required that a person reasonably skilled in the prior art must ignore" the teaching away of the prior art that such batteries were impractical and that water-activated batteries were successful only when combined with electrolytes detrimental to the use of magnesium electrodes. *Id.* at 42-43, 50-52, 148 USPQ at 480, 483. "When the prior art teaches away from combining certain known elements, discovery of successful means of combining them is more likely to be nonobvious."*KSR*, 550 U.S. at ___, 82 USPQ2d at 1395.

Example 2:

The claimed invention in *Ruiz v. AB Chance Co.*, 357 F.3d 1270, 69 USPQ2d 1686 (Fed. Cir. 2004) was directed to a system which employs a screw anchor for underpinning existing foundations and a metal bracket to transfer the building load onto the screw anchor. The prior art (Fuller) used screw anchors for underpinning existing structural foundations. Fuller used a concrete haunch to transfer the load of the foundation to the screw anchor. The prior art (Gregory) used a push pier for underpinning existing structural foundations. Gregory taught a method of transferring load using a bracket, specifically: a metal bracket transfers the foundation load to the push pier. The pier is driven into the ground to support the load. Neither reference showed the two elements of the claimed invention – screw anchor and metal bracket – used together. The court found that "artisans knew that a foundation underpinning system requires a means of connecting the foundation to the load-bearing member." *Id.* at 1276, 69 USPQ2d at 1691.

The nature of the problem to be solved – underpinning unstable foundations – as well as the need to connect the member to the foundation to accomplish this goal, would have led one of ordinary skill in the art to choose an appropriate load bearing member and a compatible attachment. Therefore, it would have been obvious to use a metal bracket (as shown in Gregory) in combination with the screw anchor (as shown in Fuller) to underpin unstable foundations.

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Example 3:

The case of *In re Omeprazole Patent Litigation*, 536 F.3d 1361 (Fed. Cir. 2008), is one in which the claims in question were found to be nonobvious in the context of an argument to combine prior art elements. The invention involved applying enteric coatings to a drug in pill form for the purpose of ensuring that the drug did not disintegrate before reaching its intended site of action. The drug at issue was omeprazole, the generic name for gastric acid inhibitor marketed as Prilosec®. The claimed formulation included two layers of coatings over the active ingredient.

The district court found that Astra's patent in suit was infringed by defendants Apotex and Impax. The district court rejected Apotex's defense that the patents were invalid for obviousness. Apotex had argued that the claimed invention was obvious because coated omeprazole tablets were known from a prior art reference, and because secondary subcoatings in pharmaceutical preparations generally were also known. There was no evidence of unpredictability associated with applying two different enteric coatings to omeprazole. However, Astra's reason for applying an intervening subcoating between the prior art coating and omeprazole had been that the prior art coating was actually interacting with omeprazole, thereby contributing to undesirable degradation of the active ingredient. This degradation of omeprazole by interaction with the prior art coating had not been recognized in the prior art. Therefore, the district court reasoned that based on the evidence available, a person of ordinary skill in the art would have had no reason to include a subcoating in an omeprazole pill formulation.

The Federal Circuit affirmed the district court's decision that the claimed invention was not obvious. Even though subcoatings for enteric drug formulation were known, and there was no evidence of undue technical hurdles or lack of a reasonable expectation of success, the formulation was nevertheless not obvious because the flaws in the prior art formulation that had prompted the modification had not been recognized. Thus there would have been no reason to modify the initial formulation, even though the modification could have been done. Moreover, a person of skill in the art likely would have chosen a different modification even if he or she had recognized the problem.

Office personnel should note that in this case the modification of the prior art that had been presented as an argument for obviousness was an extra process step that added an additional component to a known, successfully marketed formulation. The proposed modification thus amounted to extra work and greater expense for no apparent reason. This is not the same as combining known prior art elements A and B when each would have been expected to contribute its own known properties to the final product. In the *Omeprazole* case, in view of the expectations of those of ordinary skill in the art, adding the subcoating would not have been expected to confer any particular desirable property on the final product. Rather, the final product obtained according to the proposed modifications would merely have been expected to have the same functional properties as the prior art product.

The Omeprazole case can also be analyzed in view of the discovery of a previously unknown problem by the patentee. If the adverse interaction between active agent and coating had been known, it might well have been obvious to use a subcoating. However, since the problem had not been previously known, there would have been no reason to incur additional time and expense to add another layer, even though the addition would have been technologically possible. This is true because the prior art of record failed to mention any stability problem, despite the acknowledgment during testimony at trial that there was a known theoretical reason that omeprazole might be subject to degradation in the presence of the known coating material.

Example 4:

The case of *Crocs, Inc. v. U.S. International Trade Commission*, 598 F.3d 1294 (Fed. Cir. 2010), is a decision in which the claimed foam footwear was held by the Federal Circuit to be nonobvious over a combination of prior art references.

The claims involved in the obviousness issue were from Crocs' U.S. Patent No. 6,993,858, and were drawn to footwear in which a one-piece molded foam base section formed the top of the shoe (the upper) and the sole. A strap also made of foam was attached to the foot opening of the upper, such that the strap could provide support to the Achilles portion of the wearer's foot. The strap was attached via connectors that allowed it to be in contact with the base section, and to pivot relative to the base section. Because both the base portion and the strap were made of foam, friction between the strap and the base section allowed the strap to maintain its position after pivoting. In other words, the foam strap did not fall under the force of gravity to a position adjacent to the heel of the base section.

The International Trade Commission (ITC) determined that the claims were obvious over the combination of two pieces of prior art. The first was the Aqua Clog, which was a shoe that corresponded to the base section of the footwear of the '858 patent. The second was the Aguerre patent, which taught heel straps made of elastic or another flexible material. In the ITC's view, the claimed invention was obvious because the prior art Aqua Clog differed from the claimed invention only as to the presence of the strap, and a suitable strap was taught by Aguerre.

The Federal Circuit disagreed. The Federal Circuit stated that the prior art did not teach foam heel straps, or that a foam heel strap should be placed in contact with a foam base. The Federal Circuit pointed out that the prior art actually counseled against using foam as a material for the heel strap of a shoe.

> The record shows that the prior art would actually discourage and teach away from the use of foam straps. An ordinary artisan in this field would not add a foam strap to the foam Aqua Clog because foam was likely to stretch and deform, in addition to causing discomfort for a wearer. The prior art depicts foam as unsuitable for straps.

Id. at 1309.

The Federal Circuit continued, stating that even if – contrary to fact – the claimed invention had been a combination of elements that were known in the prior art, the claims still would have been nonobvious. There was testimony in the record that the loose fit of the heel strap made the shoe more comfortable for the wearer than prior art shoes in which the heel strap was constantly in contact with the wearer's foot. In the claimed footwear, the foam heel strap contacted the wearer's foot only when needed to help reposition the foot properly in the shoe, thus reducing wearer discomfort that could arise from constant contact. This desirable feature was a result of the friction between the base section and the strap that kept the strap in place behind the Achilles portion of the wearer's foot. The Federal Circuit pointed out that this combination "yielded more than predictable results." Id. at 1310. Aguerre had taught that friction between the base section and the strap was a problem rather than an advantage, and had suggested the use of nylon washers to reduce friction. Thus the Federal Circuit stated that even if all elements of the claimed invention had been taught by the prior art, the claims would not have been obvious because the combination yielded more than predictable results.

The Federal Circuit's discussion in Crocs serves as a reminder to Office personnel that merely pointing to the presence of all claim elements in the prior art is not a complete statement of a rejection for

obviousness. In accordance with MPEP § 2143 A(3), a proper rejection based on the rationale that the claimed invention is a combination of prior art elements also includes a finding that results flowing from the combination would have been predictable to a person of ordinary skill in the art. MPEP § 2143 A(3). If results would not have been predictable, Office personnel should not enter an obviousness rejection using the combination of prior art elements rationale, and should withdraw such a rejection if it has been made.

Example 5:

Sundance, Inc. v. DeMonte Fabricating Ltd., 550 F.3d 1356 (Fed. Cir. 2008), involved a segmented and mechanized cover for trucks, swimming pools, or other structures. The claim was found to be obvious over the prior art applied.

A first prior art reference taught that a reason for making a segmented cover was ease of repair, in that a single damaged segment could be readily removed and replaced when necessary. A second prior art reference taught the advantages of a mechanized cover for ease of opening. The Federal Circuit noted that the segmentation aspect of the first reference and the mechanization function of the second perform in the same way after combination as they had before. The Federal Circuit further observed that a person of ordinary skill in the art would have expected that adding replaceable segments as taught by the first reference to the mechanized cover of the other would result in a cover that maintained the advantageous properties of both of the prior art covers.

Thus, the Sundance case points out that a hallmark of a proper obviousness rejection based on combining known prior art elements is that one of ordinary skill in the art would reasonably have expected the elements to maintain their respective properties or functions after they have been combined.

Example 6:

In the case of *Ecolab, Inc. v. FMC Corp.*, 569 F.3d 1335 (Fed Cir. 2009), an "apparent reason to combine" in conjunction with the technical ability to optimize led to the conclusion that the claimed invention would have been obvious.

The invention in question was a method of treating meat to reduce the incidence of pathogens, by spraying the meat with an antibacterial solution under specified conditions. The parties did not dispute that a single prior art reference had taught all of the elements of the claimed invention, except for the pressure limitation of "at least 50 psi."

FMC had argued at the district court that the claimed invention would have been obvious in view of the first prior art reference mentioned above in view of a second reference that had taught the advantages of spray-treating at pressures of 20 to 150 psi when treating meat with a different antibacterial agent. The district court did not find FMC's argument to be convincing, and denied the motion for judgment as a matter of law that the claim was obvious.

Disagreeing with the district court, the Federal Circuit stated that "there was an apparent reason to combine these known elements – namely to increase contact between the [antibacterial solution] and the bacteria on the meat surface and to use the pressure to wash additional bacteria off the meat surface." Id. at 1350. The Federal Circuit explained that because the second reference had taught "using high pressure to improve the effectiveness of an antimicrobial solution when sprayed onto meat, and because an ordinarily skilled artisan would have recognized the reasons for applying [the claimed antibacterial

solution] using high pressure and would have known how to do so, Ecolab's claims combining high pressure with other limitations disclosed in FMC's patent are invalid as obvious." Id.

When considering the question of obviousness, Office personnel should keep in mind the capabilities of a person of ordinary skill. In Ecolab, the Federal Circuit stated:

> Ecolab's expert admitted that one skilled in the art would know how to adjust application parameters to determine the optimum parameters for a particular solution. The question then is whether it would have been obvious to combine the high pressure parameter disclosed in the Bender patent with the PAA methods disclosed in FMC's '676 patent. The answer is yes.

Id. If optimization of the application parameters had not been within the level of ordinary skill in the art, the outcome of the Ecolab case may well have been different.

Example 7:

In the case of *Wyers v. Master Lock Co.*, 616 F.3d 1231 (Fed. Cir. 2010), the Federal Circuit held that the claimed barbell-shaped hitch pin locks used to secure trailers to vehicles were obvious.

The court discussed two different sets of claims in Wyers, both drawn to improvements over the prior art hitch pin locks. The first improvement was a removable sleeve that could be placed over the shank of the hitch pin lock so that the same lock could be used with towing apertures of varying sizes. The second improvement was an external flat flange seal adapted to protect the internal lock mechanism from contaminants. Wyers had admitted that each of several prior art references taught every element of the claimed inventions except for the removable sleeve and the external covering. Master Lock had argued that these references, in combination with additional references teaching the missing elements, would have rendered the claims obvious. The court first addressed the question of whether the additional references relied on by Master Lock were analogous prior art. As to the reference teaching the sleeve improvement, the court concluded that it dealt specifically with using a vehicle to tow a trailer, and was therefore in the same field of endeavor as Wyers' sleeve improvement. The reference teaching the sealing improvement dealt with a padlock rather than a lock for a tow hitch. The court noted that Wyers' specification had characterized the claimed invention as being in the field of locking devices, thus at least suggesting that the sealed padlock reference was in the same field of endeavor. However, the court also observed that even if sealed padlocks were not in the same field of endeavor, they were nevertheless reasonably pertinent to the problem of avoiding contamination of a locking mechanism for tow hitches. The court explained that the Supreme Court's decision in KSR "directs [it] to construe the scope of analogous art broadly." Id. at XX. For these reasons, the court found that Master Lock's asserted references were analogous prior art, and therefore relevant to the obviousness inquiry.

The court then turned to the question of whether there would have been adequate motivation to combine the prior art elements as had been urged by Master Lock. The court recalled the Graham inquiries, and also emphasized the "expansive and flexible" post-KSR approach to obviousness that must not "deny factfinders recourse to common sense." Id. at XX. (quoting KSR, 550 U.S. at 415 and 421). The court stated:

> KSR and our later cases establish that the legal determination of obviousness may include recourse to logic, judgment, and common sense, in lieu of expert testimony. . . . Thus, in appropriate cases, the ultimate inference as to the existence of a motivation to combine references may boil down to a question of "common sense," appropriate for resolution on

summary judgment or JMOL.

Id. at 15 (citing *Perfect Web Techs., Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1329 (Fed. Cir. 2009); *Ball Aerosol*, 555 F.3d at 993).

After reviewing these principles, the court proceeded to explain why adequate motivation to combine had been established in this case. With regard to the sleeve improvement, it pointed out that the need for different sizes of hitch pins was well known in the art, and that this was a known source of inconvenience and expense for users. The court also mentioned the marketplace aspect of the issue, noting that space on store shelves was at a premium, and that removable sleeves addressed this economic concern. As to the sealing improvement, the court pointed out that both internal and external seals were well-known means to protect locks from contaminants. The court concluded that the constituent elements were being employed in accordance with their recognized functions, and would have predictably retained their respective functions when combined as suggested by Master Lock. The court cited In re O'Farrell, 853 F.2d 894, 904 (Fed. Cir. 1988) for the proposition that a reasonable expectation of success is a requirement for a proper determination of obviousness.

Office personnel should note that although the Federal Circuit invoked the idea of common sense in support of a conclusion of obviousness, it did not end its explanation there. Rather, the court explained why a person of ordinary skill in the art at the time of the invention, in view of the facts relevant to the case, would have found the claimed inventions to have been obvious. The key to supporting any rejection under **35 U.S.C. 103** is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR* noted that the analysis supporting a rejection under **35 U.S.C. 103** should be made explicit. The Court quoting *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006), stated that "[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." See **MPEP § 2141**, subsection III. Office personnel should continue to provide a reasoned explanation for every obviousness rejection.

Example 8:

The claim in *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314 (Fed. Cir. 2009), was directed to a polyaxial pedicle screw used in spinal surgeries that included a compression member for pressing a screw head against a receiver member. A prior art reference (Puno) disclosed all of the elements of the claim except for the compression member. Instead, the screw head in Puno was separated from the receiver member to achieve a shock absorber effect, allowing some motion between receiver member and the vertebrae. The missing compression member was readily found in another prior art reference (Anderson), which disclosed an external fracture immobilization splint for immobilizing long bones with a swivel clamp capable of polyaxial movement until rigidly secured by a compression member. It was asserted during trial that a person of ordinary skill would have recognized that the addition of Anderson's compression member to Puno's device would have achieved a rigidly locked polyaxial pedicle screw covered by the claim.

In conducting its analysis, the Federal Circuit noted that the "predictable result" discussed in *KSR* refers not only to the expectation that prior art elements are capable of being physically combined, but also that the combination would have worked for its intended purpose. In this case, it was successfully argued that Puno "teaches away" from a rigid screw because Puno warned that rigidity increases the likelihood that the screw will fail within the human body, rendering the device inoperative for its intended purpose. In fact, the reference did not merely express a general preference for pedicle screws having a "shock

absorber" effect, but rather expressed concern for failure and stated that the shock absorber feature "decrease[s] the chance of failure of the screw of the bone-screw interface" because "it prevent[s] direct transfer of load from the rod to the bone-screw interface." Thus, the alleged reason to combine the prior art elements of Puno and Anderson—increasing the rigidity of the screw—ran contrary to the prior art that taught that increasing rigidity would result in a greater likelihood of failure. In view of this teaching and the backdrop of collective teachings of the prior art, the Federal Circuit determined that Puno teaches away from the proposed combination such that a person of ordinary skill would have been deterred from combining the references as proposed. Secondary considerations evaluated by the Federal Circuit relating to failure by others and copying also supported the view that the combination would not have been obvious at the time of the invention.

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B. Simple Substitution of One Known Element for Another To Obtain Predictable Results

To reject a claim based on this rationale, Office personnel must resolve the *Graham* factual inquiries. Then, Office personnel must articulate the following:

> (1) a finding that the prior art contained a device (method, product, etc.) which differed from the claimed device by the substitution of some components (step, element, etc.) with other components;
> (2) a finding that the substituted components and their functions were known in the art;
> (3) a finding that one of ordinary skill in the art could have substituted one known element for another, and the results of the substitution would have been predictable; and
> (4) whatever additional findings based on the *Graham* factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness.

The rationale to support a conclusion that the claim would have been obvious is that the substitution of one known element for another yields predictable results to one of ordinary skill in the art. If any of these findings cannot be made, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art.

Example 1:

The claimed invention in *In re Fout*, 675 F.2d 297, 213 USPQ 532 (CCPA 1982) was directed to a method for decaffeinating coffee or tea. The prior art (Pagliaro) method produced a decaffeinated vegetable material and trapped the caffeine in a fatty material (such as oil). The caffeine was then removed from the fatty material by an aqueous extraction process. Applicant (Fout) substituted an evaporative distillation step for the aqueous extraction step. The prior art (Waterman) suspended coffee in oil and then directly distilled the caffeine through the oil. The court found that "[b]ecause both Pagliaro and Waterman teach a method for separating caffeine from oil, it would have been *prima facie* obvious to substitute one method for the other. Express suggestion to substitute one equivalent for another need not be present to render such substitution obvious." *Id.* at 301, 213 USPQ at 536.

Example 2:

The invention in *In re O'Farrell*, 853 F.2d 894, 7 USPQ2d 1673 (Fed. Cir. 1988) was directed to a

method for synthesizing a protein in a transformed bacterial host species by substituting a heterologous gene for a gene native to the host species. Generally speaking, protein synthesis *in vivo* followed the path of DNA to RNA to protein. Although the prior art Polisky article (authored by two of the three inventors of the application) had explicitly suggested employing the method described for protein synthesis, the inserted heterologous gene exemplified in the article was one that normally did not proceed all the way to the protein production step, but instead terminated with the RNA. A second reference to Bahl had described a general method of inserting chemically synthesized DNA into a plasmid. Thus, it would have been obvious to one of ordinary skill in the art to replace the prior art gene with another gene known to lead to protein production, because one of ordinary skill in the art would have been able to carry out such a substitution, and the results were reasonably predictable.

In response to applicant's argument that there had been significant unpredictability in the field of molecular biology at the time of the invention, the court stated that the level of skill was quite high and that the teachings of Polisky, even taken alone, contained detailed enabling methodology and included the suggestion that the modification would be successful for synthesis of proteins.

This is not a situation where the rejection is a statement that it would have been "obvious to try" without more. Here there was a reasonable expectation of success. "Obviousness does not require absolute predictability of success." *Id.* at 903, 7 USPQ2d at 1681.

Example 3:

The fact pattern in *Ruiz v. AB Chance Co.,* 357 F.3d 1270, 69 USPQ2d 1686 (Fed. Cir. 2004) is set forth above in Example 2 in subsection A.

The prior art showed differing load-bearing members and differing means of attaching the foundation to the member. Therefore, it would have been obvious to one of ordinary skill in the art to substitute the metal bracket taught in Gregory for Fuller's concrete haunch for the predictable result of transferring the load.

Example 4:

The claimed invention in *Ex parte Smith* , 83 USPQ2d 1509 (Bd. Pat. App. & Int. 2007), was a pocket insert for a bound book made by gluing a base sheet and a pocket sheet of paper together to form a continuous two-ply seam defining a closed pocket. The prior art (Wyant) disclosed at least one pocket formed by folding a single sheet and securing the folder portions along the inside margins using any convenient bonding method. The prior art (Wyant) did not disclose bonding the sheets to form a continuous two-ply seam. The prior art (Dick) disclosed a pocket that is made by stitching or otherwise securing two sheets along three of its four edges to define a closed pocket with an opening along its fourth edge.

In considering the teachings of Wyant and Dick, the Board "found that (1) each of the claimed elements is found within the scope and content of the prior art; (2) one of ordinary skill in the art could have combined the elements as claimed by methods known at the time the invention was made; and (3) one of ordinary skill in the art would have recognized at the time the invention was made that the capabilities or functions of the combination were predictable." Citing *KSR*, the Board concluded that "[t]he substitution of the continuous, two-ply seam of Dick for the folded seam of Wyant thus is no more than the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for improvement.

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Example 5:

The claimed invention in *In re ICON Health & Fitness, Inc.*, 496 F.3d 1374 (Fed. Cir. 2007), was directed to a treadmill with a folding tread base that swivels into an upright storage position, including a gas spring connected between the tread base and the upright structure to assist in stably retaining the tread base in the storage position. On reexamination, the examiner rejected the claims as obvious based on a combination of references including an advertisement (Damark) for a folding treadmill demonstrating all of the claim elements other than the gas spring, and a patent (Teague) with a gas spring. Teague was directed to a bed that folds into a cabinet using a novel dual-action spring that reverses force as the mechanism passes a neutral position, rather than a single-action spring that would provide a force pushing the bed closed at all times. The dual-action spring reduced the force required to open the bed from the closed position, while reducing the force required to lift the bed from the open position.

The Federal Circuit addressed the propriety of making the combination since Teague comes from a different field than the application. Teague was found to be reasonably pertinent to the problem addressed in the application because the folding mechanism did not require any particular focus on treadmills, but rather generally addressed problems of supporting the weight of such a mechanism and providing a stable resting position.

Other evidence was considered concerning whether one skilled in the art would have been led to combine the teachings of Damark and Teague. Appellant argued that Teague teaches away from the invention because it directs one skilled in the art not to use single-action springs and does not satisfy the claim limitations as the dual-action springs would render the invention inoperable. The Federal Circuit considered the arguments and found that while Teague at most teaches away from using single-action springs to decrease the opening force, it actually instructed that single-action springs provide the result desired by the inventors, which was to increase the opening force provided by gravity. As to inoperability, the claims were not limited to single-action springs and were so broad as to encompass anything that assists in stably retaining the tread base, which is the function that Teague accomplished. Additionally, the fact that the counterweight mechanism from Teague used a large spring, which appellant argued would overpower the treadmill mechanism, ignores the modifications that one skilled in the art would make to a device borrowed from the prior art. One skilled in the art would size the components from Teague appropriately for the application.

ICON is another useful example for understanding the scope of analogous art. The art applied concerned retaining mechanisms for folding beds, not treadmills. When determining whether a reference may properly be applied to an invention in a different field of endeavor, it is necessary to consider the problem to be solved. It is certainly possible that a reference may be drawn in such a way that its usefulness as a teaching is narrowly restricted. However, in *ICON*, the "treadmill" concept was too narrow a lens through which to view the art in light of the prior art teachings concerning the problem to be solved. The Teague reference was analogous art because "Teague and the current application both address the need to stably retain a folding mechanism," id. at 1378, and because "nothing about ICON's folding mechanism requires any particular focus on treadmills," id. at 1380.

ICON is also informative as to the relationship between the problem to be solved and existence of a reason to combine. "Indeed, while perhaps not dispositive of the issue, the finding that Teague, by addressing a similar problem, provides analogous art to ICON's application goes a long way towards demonstrating a reason to combine the two references. Because ICON's broad claims read on embodiments addressing that problem as described by Teague, the prior art here indicates a reason to incorporate its teachings." Id. at 1380-81.

The Federal Circuit's discussion in *ICON* also makes clear that if the reference does not teach that a combination is undesirable, then it cannot be said to teach away. An assessment of whether a combination would render the device inoperable must not "ignore the modifications that one skilled in the art would make to a device borrowed from the prior art." Id. at 1382.

Example 6:

Agrizap, Inc. v. Woodstream Corp., 520 F.3d 1337 (Fed. Cir. 2008), involved a stationary pest control device for electrocution of pests such as rats and gophers, in which the device is set in an area where the pest is likely to encounter it. The only difference between the claimed device and the prior art stationary pest control device was that the claimed device employed a resistive electrical switch, while the prior art device used a mechanical pressure switch. A resistive electrical switch was taught in two prior art patents, in the contexts of a hand-held pest control device and a cattle prod.

In determining that the claimed invention was obvious, the Federal Circuit noted that "[t]he asserted claims simply substitute a resistive electrical switch for the mechanical pressure switch" employed in the prior art device. Id. at 1344. In this case, the prior art concerning the hand-held devices revealed that the function of the substituted resistive electrical switch was well known and predictable, and that it could be used in a pest control device. According to the Federal Circuit, the references that taught the hand-held devices showed that "the use of an animal body as a resistive switch to complete a circuit for the generation of an electric charge was already well known in the prior art." Id. Finally, the Federal Circuit noted that the problem solved by using the resistive electrical switch in the prior art hand-held devices – malfunction of mechanical switches due to dirt and dampness – also pertained to the prior art stationary pest control device.

The Federal Circuit recognized *Agrizap* as "a textbook case of when the asserted claims involve a combination of familiar elements according to known methods that does no more than yield predictable results." Id. *Agrizap* exemplifies a strong case of obviousness based on simple substitution that was not overcome by the objective evidence of nonobviousness offered. It also demonstrates that analogous art is not limited to the field of applicant's endeavor, in that one of the references that used an animal body as a resistive switch to complete a circuit for the generation of an electric charge was not in the field of pest control.

Example 7:

The invention at issue in *Muniauction, Inc. v. Thomson Corp.*, 532 F.3d 1318 (Fed. Cir. 2008), was a method for auctioning municipal bonds over the Internet. A municipality could offer a package of bond instruments of varying principal amounts and maturity dates, and an interested buyer would then submit a bid comprising a price and interest rate for each maturity date. It was also possible for the interested buyer to bid on a portion of the offering. The claimed invention considered all of the noted parameters to determine the best bid. It operated on conventional Web browsers and allowed participants to monitor the course of the auction.

The only difference between the prior art bidding system and the claimed invention was the use of a conventional Web browser. At trial, the district court had determined that Muniauction's claims were not obvious. Thomson argued that the claimed invention amounted to incorporating a Web browser into a prior art auction system, and was therefore obvious in light of *KSR*. Muniauction rebutted the argument by offering evidence of skepticism by experts, copying, praise, and commercial success. Although the district court found the evidence to be persuasive of nonobviousness, the Federal Circuit disagreed. It

noted that a nexus between the claimed invention and the proffered evidence was lacking because the evidence was not coextensive with the claims at issue. For this reason, the Federal Circuit determined that Muniauction's evidence of secondary considerations was not entitled to substantial weight.

The Federal Circuit analogized this case to Leapfrog Enterprises, Inc. v. Fisher-Price, Inc., 485 F.3d 1157 (Fed. Cir. 2007). The *Leapfrog* case involved a determination of obviousness based on application of modern electronics to a prior art mechanical children's learning device. In Leapfrog, the court had noted that market pressures would have prompted a person of ordinary skill to use modern electronics in the prior art device. Similarly in Muniauction, market pressures would have prompted a person of ordinary skill to use a conventional Web browser in a method of auctioning municipal bonds.

Example 8:

In *Aventis Pharma Deutschland v. Lupin Ltd.*, 499 F.3d 1293 (Fed. Cir. 2007), the claims were drawn to the 5(S) stereoisomer of the blood pressure drug ramipril in stereochemically pure form, and to compositions and methods requiring 5(S) ramipril. The 5(S) stereoisomer is one in which all five stereocenters in the ramipril molecule are in the S rather than the R configuration. A mixture of various stereoisomers including 5(S) ramipril had been taught by the prior art. The question before the court was whether the purified single stereoisomer would have been obvious over the known mixture of stereoisomers.

The record showed that the presence of multiple S stereocenters in drugs similar to ramipril was known to be associated with enhanced therapeutic efficacy. For example, when all of the stereocenters were in the S form in the related drug enalapril (SSS enalapril) as compared with only two stereocenters in the S form (SSR enalapril), the therapeutic potency was 700 times as great. There was also evidence to indicate that conventional methods could be used to separate the various stereoisomers of ramipril.

The district court saw the issue as a close case, because, in its view, there was no clear motivation in the prior art to isolate 5(S) ramipril. However, the Federal Circuit disagreed, and found that the claims would have been obvious. The Federal Circuit cautioned that requiring such a clearly stated motivation in the prior art to isolate 5(S) ramipril ran counter to the Supreme Court's decision in KSR. The court stated:

> Requiring an explicit teaching to purify the 5(S) stereoisomer from a mixture in which it is the active ingredient is precisely the sort of rigid application of the TSM test that was criticized in *KSR*.

Id. at 1301. The Aventis court also relied on the settled principle that in chemical cases, structural similarity can provide the necessary reason to modify prior art teachings. The Federal Circuit also addressed the kind of teaching that would be sufficient in the absence of an explicitly stated prior art-based motivation, explaining that an expectation of similar properties in light of the prior art can be sufficient, even without an explicit teaching that the compound will have a particular utility.

In the chemical arts, the cases involving so-called "lead compounds" form an important subgroup of the obviousness cases that are based on substitution. The Federal Circuit has had a number of opportunities since the KSR decision to discuss the circumstances under which it would have been obvious to modify a known compound to arrive at a claimed compound. The following cases explore the selection of a lead compound, the need to provide a reason for any proposed modification, and the predictability of the result.

Example 9:

Eisai Co. Ltd. v. Dr. Reddy's Labs., Ltd., 533 F.3d 1353 (Fed. Cir. 2008), concerns the pharmaceutical compound rabeprazole. Rabeprazole is a proton pump inhibitor for treating stomach ulcers and related disorders. The Federal Circuit affirmed the district court's summary judgment of nonobviousness, stating that no reason had been advanced to modify the prior art compound in a way that would destroy an advantageous property.

Co-defendant Teva based its obviousness argument on the structural similarity between rabeprazole and lansoprazole. The compounds were recognized as sharing a common core, and the Federal Circuit characterized lansoprazole as a "lead compound." The prior art compound lansoprazole was useful for the same indications as rabeprazole, and differed from rabeprazole only in that lansoprazole has a trifluoroethoxy substituent at the 4-position of the pyridine ring, while rabeprazole has a methoxypropoxy substituent. The trifluoro substituent of lansoprazole was known to be a beneficial feature because it conferred lipophilicity to the compound. The ability of a person of ordinary skill to carry out the modification to introduce the methoxypropoxy substituent, and the predictability of the result were not addressed.

Despite the significant similarity between the structures, the Federal Circuit did not find any reason to modify the lead compound. According to the Federal Circuit:

> Obviousness based on structural similarity thus can be proved by identification of some motivation that would have led one of ordinary skill in the art to select and then modify a known compound (i.e. a lead compound) in a particular way to achieve the claimed compound. . . . In keeping with the flexible nature of the obviousness inquiry, *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 127 S.Ct. 1727, 1739, 167 L.Ed.2d 705 (2007), the requisite motivation can come from any number of sources and need not necessarily be explicit in the art. See *Aventis Pharma Deutschland GmbH v. Lupin, Ltd.*, 499 F.3d 1293, 1301 (Fed. Cir. 2007). Rather "it is sufficient to show that the claimed and prior art compounds possess a 'sufficiently close relationship . . . to create an expectation,' in light of the totality of the prior art, that the new compound will have 'similar properties' to the old." Id. (quoting *Dillon*, 919 F.2d at 692).

Eisai, 533 F.3d at 1357. The prior art taught that introducing a fluorinated substituent was known to increase lipophilicity, so a skilled artisan would have expected that replacing the trifluoroethoxy substituent with a methoxypropoxy substituent would have reduced the lipophilicity of the compound. Thus, the prior art created the expectation that rabeprazole would be less useful than lansoprazole as a drug for treating stomach ulcers and related disorders because the proposed modification would have destroyed an advantageous property of the prior art compound. The compound was not obvious as argued by Teva because, upon consideration of all of the facts of the case, a person of ordinary skill in the art at the time of the invention would not have had a reason to modify lansoprazole so as to form rabeprazole.

Office personnel are cautioned that the term "lead compound" in a particular opinion can have a contextual meaning that may vary from the way a pharmaceutical chemist might use the term. In the field of pharmaceutical chemistry, the term "lead compound" has been defined variously as "a chemical compound that has pharmacological or biological activity and whose chemical structure is used as a starting point for chemical modifications in order to improve potency, selectivity, or pharmacokinetic parameters;" "[a] compound that exhibits pharmacological properties which suggest its development;" and "a potential drug being tested for safety and efficacy." See, e.g.,

http://en.wikipedia.org/wiki/Lead_compound, accessed January 13, 2010; www.combichemistry.com/glossary_k.html, accessed January 13, 2010; and www.buildingbiotechnology.com/glossary4.php, accessed January 13, 2010.

The Federal Circuit in *Eisai* makes it clear that from the perspective of the law of obviousness, any known compound might possibly serve as a lead compound: "Obviousness based on structural similarity thus can be proved by identification of some motivation that would have led one of ordinary skill in the art to select and then modify a known compound (i.e. a lead compound) in a particular way to achieve the claimed compound." *Eisai*, 533 F.3d at 1357. Thus, Office personnel should recognize that a proper obviousness rejection of a claimed compound that is useful as a drug might be made beginning with an inactive compound, if, for example, the reasons for modifying a prior art compound to arrive at the claimed compound have nothing to do with pharmaceutical activity. The inactive compound would not be considered to be a lead compound by pharmaceutical chemists, but could potentially be used as such when considering obviousness. Office personnel might also base an obviousness rejection on a known compound that pharmaceutical chemists would not select as a lead compound due to expense, handling issues, or other business considerations. However, there must be some reason for starting with that lead compound other than the mere fact that the "lead compound" merely exists. See *Altana Pharma AG v. Teva Pharmaceuticals USA, Inc.*, 566 F.3d 999, 1007 (Fed. Cir. 2009) (holding that there must be some reason "to select and modify a known compound"); *Ortho-McNeil Pharmaceutical, Inc. v. Mylan Labs, Inc.*, 520 F.3d 1358, 1364 (Fed. Cir. 2008).

Example 10:

A chemical compound was also found to be nonobvious in *Procter & Gamble Co. v. Teva Pharmaceuticals USA, Inc.*, 566 F.3d 989 (Fed. Cir. 2009). The compound at issue was risedronate – the active ingredient of Procter & Gamble's osteoporosis drug Actonel®. Risedronate is an example of a bisphosphonate, which is a class of compounds known to inhibit bone resorption.

When Procter & Gamble sued Teva for infringement, Teva defended by arguing invalidity for obviousness over one of Procter & Gamble's earlier patents. The prior art patent did not teach risedronate, but instead taught thirty-six other similar compounds including 2-pyr EHDP that were potentially useful with regard to osteoporosis. Teva argued obviousness on the basis of structural similarity to 2-pyr EHDP, which is a positional isomer of risedronate.

The district court found no reason to select 2-pyr EHDP as a lead compound in light of the unpredictable nature of the art, and no reason to modify it so as to obtain risedronate. In addition, there were unexpected results as to potency and toxicity. Therefore the district court found that Teva had not made a prima facie case, and even if it had, it was rebutted by evidence of unexpected results.

The Federal Circuit affirmed the district court's decision. The Federal Circuit did not deem it necessary in this case to consider the question of whether 2-pyr EHDP had been appropriately selected as a lead compound. Rather, the Federal Circuit stated that if 2-pyr EHDP is presumed to be an appropriate lead compound, there must be both a reason to modify it so as to make risedronate, and a reasonable expectation of success. Here there was no evidence that the necessary modifications would have been routine, so there would have been no reasonable expectation of success.

Procter & Gamble is also informative in its discussion of the treatment of secondary considerations of non-obviousness. Although the court found that no prima facie case of obviousness had been presented, it proceeded to analyze Procter & Gamble's proffered evidence countering the alleged prima facie case in

some detail, thus shedding light on the proper treatment of such evidence.

The Federal Circuit noted in dicta that even if a *prima facie* case of obviousness had been established, sufficient evidence of unexpected results was introduced to rebut such a showing. At trial, the witnesses consistently testified that the properties of risedronate were not expected, offering evidence that researchers did not predict either the potency or the low dose at which the compound was effective, and that the superior properties were unexpected and could not be predicted. Tests comparing risedronate to a compound in the prior art reference showed that risedronate outperformed the other compound by a substantial margin, could be administered in a greater amount without an observable toxic effect, and was not lethal at the same levels as the other compound. The weight of the evidence and the credibility of the witnesses were sufficient to show unexpected results that would have rebutted an obviousness determination. Thus, nonobviousness can be shown when a claimed invention is shown to have unexpectedly superior properties when compared to the prior art.

The court then addressed the evidence of commercial success of risedronate and the evidence that risedronate met a long felt need. The court pointed out that little weight was to be afforded to the commercial success because the competing product was also assigned to Procter & Gamble. However, the Federal Circuit affirmed the district court's conclusion that risedronate met a long-felt, unsatisfied need. The court rejected Teva's contention that because the competing drug was available before Actonel7, there was no unmet need that the invention satisfied. The court emphasized that whether there was a long-felt unsatisfied need is to be evaluated based on the circumstances as of the filing date of the challenged invention – not as of the date that the invention is brought to market.

It should be noted that the lead compound cases do not stand for the proposition that identification of a single lead compound is necessary in every obviousness rejection of a chemical compound. For example, one might envision a suggestion in the prior art to formulate a compound having certain structurally defined moieties, or moieties with certain properties. If a person of ordinary skill would have known how to synthesize such a compound, and the structural and/or functional result could reasonably have been predicted, then a prima facie case of obviousness of the claimed chemical compound might exist even without identification a particular lead compound. As a second example, it could be possible to view a claimed compound as consisting of two known compounds attached via a chemical linker. The claimed compound might properly be found to have been obvious if there would have been a reason to link the two, if one of ordinary skill would have known how to do so, and if the resulting compound would have been the predictable result of the linkage procedure. Thus, Office personnel should recognize that in certain situations, it may be proper to reject a claimed chemical compound as obvious even without identifying a single lead compound.

Example 11:

Although the decision reached by the Federal Circuit in *Altana Pharma AG v. Teva Pharmaceuticals USA, Inc.*, 566 F.3d 999 (Fed. Cir. 2009), involved a motion for preliminary injunction and did not include a final determination of obviousness, the case is nevertheless instructive as to the issue of selecting a lead compound.

The technology involved in *Altana* was the compound pantoprazole, which is the active ingredient in Altana's antiulcer drug Protonix®. Pantoprazole belongs to a class of compounds known as proton pump inhibitors that are used to treat gastric acid disorders in the stomach.

Altana accused Teva of infringement. The district court denied Altana's motion for preliminary

injunction for failure to establish a likelihood of success on the merits, determining that Teva had demonstrated a substantial question of invalidity for obviousness in light of one of Altana's prior patents. Altana's patent discussed a compound referred to as compound 12, which was one of eighteen compounds disclosed. The claimed compound pantoprazole was structurally similar to compound 12. The district court found that one of ordinary skill in the art would have selected compound 12 as a lead compound for modification, and the Federal Circuit affirmed.

Obviousness of a chemical compound in view of its structural similarity to a prior art compound may be shown by identifying some line of reasoning that would have led one of ordinary skill in the art to select and modify the prior art compound in a particular way to produce the claimed compound. The necessary line of reasoning can be drawn from any number of sources and need not necessarily be explicitly found in the prior art of record. The Federal Circuit determined that ample evidence supported the district court's finding that compound 12 was a natural choice for further development. For example, Altana's prior art patent claimed that its compounds, including compound 12, were improvements over the prior art; compound 12 was disclosed as one of the more potent of the eighteen compounds disclosed; the patent examiner had considered the compounds of Altana's prior art patent to be relevant during the prosecution of the patent in suit; and experts had opined that one of ordinary skill in the art would have selected the eighteen compounds to pursue further investigation into their potential as proton pump inhibitors.

In response to Altana's argument that the prior art must point to only a single lead compound for further development, the Federal Circuit stated that a "restrictive view of the lead compound test would present a rigid test similar to the teaching-suggestion-motivation test that the Supreme Court explicitly rejected in KSR . . . . The district court in this case employed a flexible approach – one that was admittedly preliminary – and found that the defendants had raised a substantial question that one of skill in the art would have used the more potent compounds of [Altana's prior art] patent, including compound 12, as a starting point from which to pursue further development efforts. That finding was not clearly erroneous." Id. at 1008.

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C. Use of Known Technique To Improve Similar Devices (Methods, or Products) in the Same Way

To reject a claim based on this rationale, Office personnel must resolve the *Graham* factual inquiries. Then, Office personnel must articulate the following:

> (1) a finding that the prior art contained a "base" device (method, or product) upon which the claimed invention can be seen as an "improvement;"
> (2) a finding that the prior art contained a "comparable" device (method, or product that is not the same as the base device) that has been improved in the same way as the claimed invention;
> (3) a finding that one of ordinary skill in the art could have applied the known "improvement" technique in the same way to the "base" device (method, or product) and the results would have been predictable to one of ordinary skill in the art; and
> (4) whatever additional findings based on the *Graham* factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness.

The rationale to support a conclusion that the claim would have been obvious is that a method of

enhancing a particular class of devices (methods, or products) has been made part of the ordinary capabilities of one skilled in the art based upon the teaching of such improvement in other situations. One of ordinary skill in the art would have been capable of applying this known method of enhancement to a "base" device (method, or product) in the prior art and the results would have been predictable to one of ordinary skill in the art. The Supreme Court in *KSR* noted that if the actual application of the technique would have been beyond the skill of one of ordinary skill in the art, then using the technique would not have been obvious. *KSR*, 550 U.S. at ___, 82 USPQ2d at 1396. If any of these findings cannot be made, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art.

Example 1:

The claimed invention in *In re Nilssen*, 851 F.2d 1401, 7 USPQ2d 1500 (Fed. Cir. 1988) was directed to a "means by which the self-oscillating inverter in a power-line-operated inverter-type fluorescent lamp ballast is disabled in case the output current from the inverter exceeds some pre-established threshold level for more than a very brief period." *Id.* at 1402, 7 USPQ2d at 1501 That is, the current output was monitored, and if the current output exceeded some threshold for a specified short time, an actuation signal was sent and the inverter was disabled to protect it from damage.

The prior art (a USSR certificate) described a device for protecting an inverter circuit in an undisclosed manner via a control means. The device indicated the high-load condition by way of the control means, but did not indicate the specific manner of overload protection. The prior art (Kammiller) disclosed disabling the inverter in the event of a high-load current condition in order to protect the inverter circuit. That is, the overload protection was achieved by disabling the inverter by means of a cutoff switch.

The court found "it would have been obvious to one of ordinary skill in the art to use the threshold signal produced in the USSR device to actuate a cutoff switch to render the inverter inoperative as taught by Kammiller." *Id.* at 1403, 7 USPQ2d at 1502. That is, using the known technique of a cutoff switch for protecting a circuit to provide the protection desired in the inverter circuit of the USSR document would have been obvious to one of ordinary skill.

Example 2:

The fact pattern in *Ruiz v. AB Chance Co.* 357 F.3d 1270, 69 USPQ2d 1686 (Fed. Cir. 2004) is set forth above in Example 2 in subsection A.

The nature of the problem to be solved may lead inventors to look at references relating to possible solutions to that problem. *Id.* at 1277, 69 USPQ2d at 1691. Therefore, it would have been obvious to use a metal bracket (as shown in Gregory) with the screw anchor (as shown in Fuller) to underpin unstable foundations.

D. Applying a Known Technique to a Known Device (Method, or Product) Ready for Improvement To Yield Predictable Results

To reject a claim based on this rationale, Office personnel must resolve the *Graham* factual inquiries. Then, Office personnel must articulate the following:

(1) a finding that the prior art contained a "base" device (method, or product) upon which the

claimed invention can be seen as an "improvement;"
(2) a finding that the prior art contained a known technique that is applicable to the base device (method, or product);
(3) a finding that one of ordinary skill in the art would have recognized that applying the known technique would have yielded predictable results and resulted in an improved system; and
(4) whatever additional findings based on the *Graham* factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness.

The rationale to support a conclusion that the claim would have been obvious is that a particular known technique was recognized as part of the ordinary capabilities of one skilled in the art. One of ordinary skill in the art would have been capable of applying this known technique to a known device (method, or product) that was ready for improvement and the results would have been predictable to one of ordinary skill in the art. If any of these findings cannot be made, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art.

Example 1:

The claimed invention in *Dann v. Johnston*, 425 U.S. 219, 189 USPQ 257 (1976) was directed towards a system (i.e., computer) for automatic record keeping of bank checks and deposits. In this system, a customer would put a numerical category code on each check or deposit slip. The check processing system would record these on the check in magnetic ink, just as it does for amount and account information. With this system in place, the bank can provide statements to customers that are broken down to give subtotals for each category. The claimed system also allowed the bank to print reports according to a style requested by the customer. As characterized by the Court, "[u]nder respondent's invention, then, a general purpose computer is programmed to provide bank customers with an individualized and categorized breakdown of their transactions during the period in question." *Id.* at 222, 189 USPQ at 259.

BASE SYSTEM - The nature of the use of data processing equipment and computer software in the banking industry was that banks routinely did much of the record-keeping automatically. In routine check processing, the system read any magnetic ink characters identifying the account and routing. The system also read the amount of the check and then printed that value in a designated area of the check. The check was then sent through a further data processing step which used the magnetic ink information to generate the appropriate records for transactions and for posting to the appropriate accounts. These systems included generating periodic statements for each account, such as the monthly statement sent to checking account customers.

IMPROVED SYSTEM - The claimed invention supplemented this system by recording a category code which can then be utilized to track expenditures by category. Again, the category code will be a number recorded on the check (or deposit slip) which will be read, converted into a magnetic ink imprint, and then processed in the data system to include the category code. This enabled reporting of data by category as opposed to only allowing reporting by account number.

KNOWN TECHNIQUE - This is an application of a technique from the prior art – the use of account numbers (generally used to track an individual's total transactions) to solve the problem of how to track categories of expenditures to more finely account for a budget. That is, account numbers (identifying data capable of processing in the automatic data processing system) were used to distinguish between different customers. Furthermore, banks have long segregated debits attributable to service charges within any given separate account and have rendered their customers subtotals for those charges. Previously, one

would have needed to set up separate accounts for each category and thus receive separate reports. Supplementing the account information with additional digits (the category codes) solved the problem by effectively creating a single account that can be treated as distinct accounts for tracking and reporting services. That is, the category code merely allowed what might previously have been separate accounts to be handled as a single account, but with a number of sub-accounts indicated in the report.

The basic technique of putting indicia on data which then enabled standard sorting, searching, and reporting yielded no more than the predictable outcome which one of ordinary skill would have expected to achieve with this common tool of the trade and was therefore an obvious expedient. The Court held that "[t]he gap between the prior art and respondent's system is simply not so great as to render the system nonobvious to one reasonably skilled in the art."*Id.* at 230, 189 USPQ at 261.

Example 2:

The fact pattern in *In re Nilssen,* 851 F.2d 1401, 7 USPQ2d 1500 (Fed. Cir. 1988) is set forth above in Example 1 in subsection C.

The court found "it would have been obvious to one of ordinary skill in the art to use the threshold signal produced in the USSR device to actuate a cutoff switch to render the inverter inoperative as taught by Kammiller." *Id.* at 1403, 7 USPQ2d at 1502. The known technique of using a cutoff switch would have predictably resulted in protecting the inverter circuit. Therefore, it would have been within the skill of the ordinary artisan to use a cutoff switch in response to the actuation signal to protect the inverter.

E. "Obvious To Try" – Choosing From a Finite Number of Identified, Predictable Solutions, With a Reasonable Expectation of Success

To reject a claim based on this rationale, Office personnel must resolve the *Graham* factual inquiries. Then, Office personnel must articulate the following:

> (1) a finding that at the time of the invention, there had been a recognized problem or need in the art, which may include a design need or market pressure to solve a problem;
> (2) a finding that there had been a finite number of identified, predictable potential solutions to the recognized need or problem;
> (3) a finding that one of ordinary skill in the art could have pursued the known potential solutions with a reasonable expectation of success; and
> (4) whatever additional findings based on the *Graham* factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness.

The rationale to support a conclusion that the claim would have been obvious is that "a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely that product [was] not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under § 103."*KSR*, 550 U.S. at ___, 82 USPQ2d at 1397. If any of these findings cannot be made, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art.

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The question of whether a claimed invention can be shown to be obvious based on an "obvious to try" line of reasoning has been explored extensively by the Federal Circuit in several cases since the *KSR* decision. The case law in this area is developing quickly in the chemical arts, although the rationale has been applied in other art areas as well.

Some commentators on the *KSR* decision have expressed a concern that because inventive activities are always carried out in the context of what has come before and not in a vacuum, few inventions will survive scrutiny under an obvious to try standard. The cases decided since KSR have proved this fear to have been unfounded. Courts appear to be applying the KSR requirement for "a finite number of identified predictable solutions" in a manner that places particular emphasis on predictability and the reasonable expectations of those of ordinary skill in the art.

The Federal Circuit pointed out the challenging nature of the task faced by the courts – and likewise by Office personnel – when considering the viability of an obvious to try argument: "The evaluation of the choices made by a skilled scientist, when such choices lead to the desired result, is a challenge to judicial understanding of how technical advance is achieved in the particular field of science or technology." *Abbott Labs. v. Sandoz, Inc.*, 544 F.3d 1341, 1352 (Fed. Cir. 2008). The Federal Circuit cautioned that an obviousness inquiry based on an obvious to try rationale must always be undertaken in the context of the subject matter in question, "including the characteristics of the science or technology, its state of advance, the nature of the known choices, the specificity or generality of the prior art, and the predictability of results in the area of interest." *Id.*

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Example 1:

The claimed invention in *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 82 USPQ2d 1321 (Fed. Cir. 2007) was directed to the amlodipine besylate drug product, which is commercially sold in tablet form in the United States under the trademark Norvasc®. At the time of the invention, amlodipine was known as was the use of besylate anions. Amlodipine was known to have the same therapeutic properties as were being claimed for the amlodipine besylate but Pfizer discovered that the besylate form had better manufacturing properties (e.g., reduced "stickiness").

Pfizer argued that the results of forming amlodipine besylate would have been unpredictable and therefore nonobvious. The court rejected the notion that unpredictability could be equated with nonobviousness here, because there were only a finite number (53) of ***pharmaceutically acceptable*** salts to be tested for improved properties.

The court found that one of ordinary skill in the art having problems with the machinability of amlodipine would have looked to forming a salt of the compound and would have been able to narrow the group of potential salt-formers to a group of 53 anions known to form pharmaceutically acceptable salts, which would be an acceptable number to form "a reasonable expectation of success."

Example 2:

The claimed invention in *Alza Corp. v. Mylan Laboratories, Inc.* , 464 F.3d 1286, 80 USPQ2d 1001 (Fed. Cir. 2006) was drawn to sustained-release formulations of the drug oxybutynin in which the drug is released at a specified rate over a 24-hour period. Oxybutynin was known to be highly water-soluble, and the specification had pointed out that development of sustained-release formulations of such drugs presented particular problems.

A prior art patent to Morella had taught sustained-release compositions of highly water-soluble drugs, as exemplified by a sustained-release formulation of morphine. Morella had also identified oxybutynin as belonging to the class of highly water-soluble drugs. The Baichwal prior art patent had taught a sustained-release formulation of oxybutynin that had a different release rate than the claimed invention. Finally, the Wong prior art patent had taught a generally applicable method for delivery of drugs over a 24-hour period. Although Wong mentioned applicability of the disclosed method to several categories of drugs to which oxybutynin belonged, Wong did not specifically mention its applicability to oxybutynin.

The court found that because the absorption properties of oxybutynin would have been reasonably predictable at the time of the invention, there would have been a reasonable expectation of successful development of a sustained-release formulation of oxybutynin as claimed. The prior art, as evidenced by the specification, had recognized the obstacles to be overcome in development of sustained-release formulations of highly water-soluble drugs, and had suggested a finite number of ways to overcome these obstacles. The claims were obvious because it would have been obvious to try the known methods for formulating sustained-release compositions, with a reasonable expectation of success. The court was not swayed by arguments of a lack of absolute predictability.

Example 3:

** > The Federal Circuit's decision in *In re Kubin*, 561 F.3d 1351 (Fed. Cir. 2009), affirmed the Office's determination in *Ex parte Kubin*, 83 USPQ2d 1410 (Bd. Pat. App. & Int. 2007) that the claims in question, directed to an isolated nucleic acid molecule, would have been obvious over the prior art applied. < The claim stated that the nucleic acid encoded a particular polypeptide. The encoded polypeptide was identified in the claim by its partially specified sequence, and by its ability to bind to a specified protein.

A prior art patent to Valiante taught the polypeptide encoded by the claimed nucleic acid, but did not disclose either the sequence of the polypeptide, or the claimed isolated nucleic acid molecule. However, Valiante did disclose that by employing conventional methods such as those disclosed by a prior art laboratory manual by Sambrook, the sequence of the polypeptide could be determined, and the nucleic acid molecule could be isolated. In view of Valiante's disclosure of the polypeptide, and of routine prior art methods for sequencing the polypeptide and isolating the nucleic acid molecule, the Board found that a person of ordinary skill in the art would have had a reasonable expectation that a nucleic acid molecule within the claimed scope could have been successfully obtained.

Relying on *In re Deuel*, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995), appellant argued that it was improper for the Office to use the polypeptide of the Valiante patent together with the methods described in Sambrook to reject a claim drawn to a specific nucleic acid molecule without providing a reference showing or suggesting a structurally similar nucleic acid molecule. Citing *KSR*, the Board stated that "when there is motivation to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to anticipated success, it is likely the product not of innovation but of ordinary skill and common sense." The Board noted that the problem facing those in the art was to isolate a specific nucleic acid, and there were a limited number of methods available to do so. The Board concluded that the skilled artisan would have had reason to try these methods with the reasonable expectation that at least one would be successful. Thus, isolating the specific nucleic acid molecule claimed was "the product not of innovation but of ordinary skill and common sense."

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The Board's reasoning was substantially adopted by the Federal Circuit. However, it is important to note that in the Kubin decision, the Federal Circuit held that "the Supreme Court in *KSR* unambiguously discredited" the Federal Circuit's decision in *Deuel*, insofar as it "implies the obviousness inquiry cannot consider that the combination of the claim's constituent elements was 'obvious to try.'" *Kubin*, 561 F.3d at 1358. Instead, *Kubin* stated that *KSR* "resurrects" the Federal Circuit's own wisdom in *O'Farrell*, in which "to differentiate between proper and improper applications of 'obvious to try,'" the Federal Circuit "outlined two classes of situations where 'obvious to try' is erroneously equated with obviousness under § 103." *Kubin*, 561 F.3d at 1359. These two classes of situations are: (1) when what would have been "obvious to try" would have been to vary all parameters or try each of numerous possible choices until one possibly arrived at a successful result, where the prior art gave either no indication of which parameters were critical or no direction as to which of many possible choices is likely to be successful; and (2) when what was "obvious to try" was to explore a new technology or general approach that seemed to be a promising field of experimentation, where the prior art gave only general guidance as to the particular form of the claimed invention or how to achieve it. Id. (citing *O'Farrell*, 853 F.2d at 903).

Example 4:

Takeda Chemical Industries, Ltd. v. Alphapharm Pty., Ltd., 492 F.3d 1350 (Fed. Cir. 2007), is an example of a chemical case in which the Federal Circuit found that the claim was not obvious. The claimed compound was pioglitazone, a member of a class of drugs known as thiazolidinediones (TZDs) marketed by Takeda as a treatment for Type 2 diabetes. The *Takeda* case brings together the concept of a "lead compound" and the obvious-to-try argument.

Alphapharm had filed an Abbreviated New Drug Application with the Food and Drug Administration, which was a technical act of infringement of Takeda's patent. When Takeda brought suit, Alphapharm's defense was that Takeda's patent was invalid due to obviousness. Alphapharm argued that a two-step modification – involving homologation and ring-walking – of a known compound identified as "compound b" would have produced pioglitazone, and that it was therefore obvious.

The district court found that there would have been no reason to select compound b as a lead compound. There were a large number of similar prior art TZD compounds; fifty-four were specifically identified in Takeda's prior patent, and the district court observed that "hundreds of millions" were more generally disclosed. Although the parties agreed that compound b represented the closest prior art, one reference had taught certain disadvantageous properties associated with compound b, which according to the district court would have taught the skilled artisan not to select that compound as a lead compound. The district court found no prima facie case of obviousness, and stated that even if a prima facie case had been established, it would have been overcome in this case in view of the unexpected lack of toxicity of pioglitazone.

The Federal Circuit affirmed the decision of the district court, citing the need for a reason to modify a prior art compound. The Federal Circuit quoted KSR, stating:

> The KSR Court recognized that "[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp." KSR, 127 S.Ct. at 1732. In such circumstances, "the fact that a combination was obvious to try might show that it was obvious under § 103." Id. That is not the case here. Rather than identify predictable solutions for antidiabetic treatment, the prior art disclosed a broad selection of compounds any one of which could have been selected as a lead

> compound for further investigation. Significantly, the closest prior art compound (compound b, the 6-methyl) exhibited negative properties that would have directed one of ordinary skill in the art away from that compound. Thus, this case fails to present the type of situation contemplated by the Court when it stated that an invention may be deemed obvious if it was "obvious to try." The evidence showed that it was not obvious to try.

Takeda, 492 F.3d at 1359.

Accordingly, Office personnel should recognize that the obvious to try rationale does not apply when the appropriate factual findings cannot be made. In Takeda, there was a recognized need for treatment of diabetes. However, there was no finite number of identified, predictable solutions to the recognized need, and no reasonable expectation of success. There were numerous known TZD compounds, and although one clearly represented the closest prior art, its known disadvantages rendered it unsuitable as a starting point for further research, and taught the skilled artisan away from its use. Furthermore, even if there had been reason to select compound b, there had been no predictability or reasonable expectation of success associated with the particular modifications necessary to transform compound b into the claimed compound pioglitazone. Thus, an obviousness rejection based on an obvious to try rationale was not appropriate in this situation.

Example 5:

The case of *Ortho-McNeil Pharmaceutical, Inc. v. Mylan Labs, Inc.*, 520 F.3d 1358 (Fed. Cir. 2008), provides another example in which a chemical compound was determined not to be obvious. The claimed subject matter was topiramate, which is used as an anti-convulsant.

In the course of working toward a new anti-diabetic drug, Ortho-McNeil's scientist had unexpectedly discovered that a reaction intermediate had anti-convulsant properties. Mylan's defense of invalidity due to obviousness rested on an obvious to try argument. However, Mylan did not explain why it would have been obvious to begin with an anti-diabetic drug precursor, especially the specific one that led to topiramate, if one had been seeking an anti-convulsant drug. The district court ruled on summary judgment that Ortho-McNeil's patent was not invalid for obviousness.

The Federal Circuit affirmed. The Federal Circuit pointed out that there was no apparent reason why a person of ordinary skill would have chosen the particular starting compound or the particular synthetic pathway that led to topiramate as an intermediate. Furthermore, there would have been no reason to test that intermediate for anticonvulsant properties if treating diabetes had been the goal. The Federal Circuit recognized an element of serendipity in this case, which runs counter to the requirement for predictability. Summarizing their conclusion with regard to Mylan's obvious to try argument, the Federal Circuit stated:

> [T]his invention, contrary to Mylan's characterization, does not present a finite (and small in the context of the art) number of options easily traversed to show obviousness. . . . KSR posits a situation with a finite, and in the context of the art, small or easily traversed, number of options that would convince an ordinarily skilled artisan of obviousness. . . . [T]his clearly is not the easily traversed, small and finite number of alternatives that KSR suggested might support an inference of obviousness.

Id. at 1364. Thus, Ortho-McNeil helps to clarify the Supreme Court's requirement in KSR for "a finite number" of predictable solutions when an obvious to try rationale is applied: under the Federal Circuit's

case law "finite" means "small or easily traversed" in the context of the art in question. As taught in Abbott, discussed above, it is essential that the inquiry be placed in the context of the subject matter at issue, and each case must be decided on its own facts.

Example 6:

In *Bayer Schering Pharma A.G. v. Barr Labs., Inc.*, 575 F.3d 1341 (Fed. Cir. 2009), the claimed invention was an oral contraceptive containing micronized drospirenone marketed as Yasmin®. The prior art compound drospirenone was known to be a poorly water-soluble, acid-sensitive compound with contraceptive effects. It was also known in the art that micronization improves the solubility of poorly water soluble drugs.

Based on the known acid sensitivity, Bayer had studied how effectively an enteric-coated drospirenone tablet delivered a formulation as compared to an intravenous injection of the same formulation to measure the "absolute bioavailability" of the drug. Bayer added an unprotected (normal) drospirenone tablet and compared its bioavailability to that of the enteric-coated formulation and the intravenous delivery. Bayer expected to find that the enteric-coated tablet would produce a lower bioavailability than an intravenous injection, while the normal pill would produce an even lower bioavailability than the enteric-coated tablet. However, they found that despite observations that drospirenone would quickly isomerize in a highly acidic environment (supporting the belief that an enteric coating would be necessary to preserve bioavailability), the normal pill and the enteric-coated pill resulted in the same bioavailability. Following this study, Bayer developed micronized drospirenone in a normal pill, the basis for the disputed patent.

The district court found that a person having ordinary skill in the art would have considered the prior art result that a structurally related compound, spirorenone, though acid-sensitive, would nevertheless absorb in vivo, would have suggested the same result for drospirenone. It also found that while another reference taught that drospirenone isomerizes in vitro when exposed to acid simulating the human stomach, a person of ordinary skill would have been aware of the study's shortcomings, and would have verified the findings as suggested by a treatise on the science of dosage form design, which would have then showed that no enteric coating was necessary.

The Federal Circuit held that the patent was invalid because the claimed formulation was obvious. The Federal Circuit reasoned that the prior art would have funneled the formulator toward two options. Thus, the formulator would not have been required to try all possibilities in a field unreduced by the prior art. The prior art was not vague in pointing toward a general approach or area of exploration, but rather guided the formulator precisely to the use of either a normal pill or an enteric-coated pill.

It is important for Office personnel to recognize that the mere existence of a large number of options does not in and of itself lead to a conclusion of nonobviousness. Where the prior art teachings lead one of ordinary skill in the art to a narrower set of options, then that reduced set is the appropriate one to consider when determining obviousness using an obvious to try rationale.

Example 7:

The case of *Sanofi-Synthelabo v. Apotex, Inc.*, 550 F.3d 1075 (Fed. Cir. 2008), also sheds light on the obvious to try line of reasoning. The claimed compound was clopidogrel, which is the dextrorotatory isomer of methyl alpha-5(4,5,6,7-tetrahydro(3,2-c)thienopyridyl)(2-chlorophenyl)-acetate. Clopidogrel is an anti-thrombotic compound used to treat or prevent heart attack or stroke. The racemate, or mixture of

dextrorotatory and levorotatory (D- and L-) isomers of the compound, was known in the prior art. The two forms had not previously been separated, and although the mixture was known to have anti-thrombotic properties, the extent to which each of the individual isomers contributed to the observed properties of the racemate was not known and was not predictable.

The district court assumed that in the absence of any additional information, the D-isomer would have been prima facie obvious over the known racemate. However, in view of the evidence of unpredicted therapeutic advantages of the D-isomer presented in the case, the district court found that any prima facie case of obviousness had been overcome. At trial, the experts for both parties testified that persons of ordinary skill in the art could not have predicted the degree to which the isomers would have exhibited different levels of therapeutic activity and toxicity. Both parties' experts also agreed that the isomer with greater therapeutic activity would most likely have had greater toxicity. Sanofi witnesses testified that Sanofi's own researchers had believed that the separation of the isomers was unlikely to have been productive, and experts for both parties agreed that it was difficult to separate isomers at the time of the invention. Nevertheless, when Sanofi ultimately undertook the task of separating the isomers, it found that they had the "rare characteristic of 'absolute stereoselectivity,'" whereby the D-isomer provided all of the favorable therapeutic activity but no significant toxicity, while the L-isomer produced no therapeutic activity but virtually all of the toxicity. Based on this record, the district court concluded that Apotex had not met its burden of proving by clear and convincing evidence that Sanofi's patent was invalid for obviousness. The Federal Circuit affirmed the district court's conclusion.

Office personnel should recognize that even when only a small number of possible choices exist, the obvious to try line of reasoning is not appropriate when, upon consideration of all of the evidence, the outcome would not have been reasonably predictable and the inventor would not have had a reasonable expectation of success. In Bayer, there were art-based reasons to expect that both the normal pill and the enteric-coated pill would be therapeutically suitable, even though not all prior art studies were in complete agreement. Thus, the result obtained was not unexpected. In Sanofi, on the other hand, there was strong evidence that persons of ordinary skill in the art, prior to the separation of the isomers, would have had no reason to expect that the D-isomer would have such strong therapeutic advantages as compared with the L-isomer. In other words, the result in Sanofi was unexpected.

Example 8:

In *Rolls-Royce, PLC v. United Technologies Corp.*, 603 F.3d 1325 (Fed. Cir. 2010), the Federal Circuit addressed the obvious to try rationale in the context of a fan blade for jet engines. The case had arisen out of an interference proceeding. Finding that the district court had correctly determined that there was no interference-in-fact because Rolls-Royce's claims would not have been obvious in light of United's application, the Federal Circuit affirmed.

The Federal Circuit described the fan blade of the count as follows:

> Each fan blade has three regions – an inner, an intermediate, and an outer region. The area closest to the axis of rotation at the hub is the inner region. The area farthest from the center of the engine and closest to the casing surrounding the engine is the outer region. The intermediate region falls in between. The count defines a fan blade with a swept-forward inner region, a swept-rearward intermediate region, and forward-leaning outer region.

Id. at 1328.

United had argued that it would have been obvious for a person of ordinary skill in the art to try a fan blade design in which the sweep angle in the outer region was reversed as compared with prior art fan blades from rearward to forward sweep, in order to reduce endwall shock. The Federal Circuit disagreed with United's assessment that the claimed fan blade would have been obvious based on an obvious to try rationale. The Federal Circuit pointed out that in a proper obvious to try approach to obviousness, the possible options for solving a problem must have been "known and finite." Id. at 1339, citing Abbott, 544 F.3d at 1351. In this case, there had been no suggestion in the prior art that would have suggested that changing the sweep angle as Rolls-Royce had done would have addressed the issue of endwall shock. Thus, the Federal Circuit concluded that changing the sweep angle "would not have presented itself as an option at all, let alone an option that would have been obvious to try." Rolls-Royce, 603 F.3d at 1339. The decision in Rolls-Royce is a reminder to Office personnel that the obvious to try rationale can properly be used to support a conclusion of obviousness only when the claimed solution would have been selected from a finite number of potential solutions known to persons of ordinary skill in the art.

Example 9:

The case of *Perfect Web Technologies, Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1328 29 (Fed. Cir. 2009), provides an example in which the Federal Circuit held that a claimed method for managing bulk e-mail distribution was obvious on the basis of an obvious to try argument. In Perfect Web, the method required selecting the intended recipients, transmitting the e-mails, determining how many of the e-mails had been successfully received, and repeating the first three steps if a pre-determined minimum number of intended recipients had not received the e-mail.

The Federal Circuit affirmed the district court's determination on summary judgment that the claimed invention would have been obvious. Failure to meet a desired quota of e mail recipients was a recognized problem in the field of e-mail marketing. The prior art had also recognized three potential solutions: increasing the size of the initial recipient list; resending e-mails to recipients who did not receive them on the first attempt; and selecting a new recipient list and sending e-mails to them. The last option corresponded to the fourth step of the invention as claimed.

The Federal Circuit noted that based on "simple logic," selecting a new list of recipients was more likely to result in the desired outcome than resending to those who had not received the e-mail on the first attempt. There had been no evidence of any unexpected result associated with selecting a new recipient list, and no evidence that the method would not have had a reasonable likelihood of success. Thus, the Federal Circuit concluded that, as required by KSR, there were a "finite number of identified, predictable solutions," and that the obvious to try inquiry properly led to the legal conclusion of obviousness.

The Federal Circuit in *Perfect Web* also discussed the role of common sense in the determination of obviousness. The district court had cited *KSR* for the proposition that "[a] person of ordinary skill is also a person of ordinary creativity, not an automaton," and found that "the final step [of the claimed invention] is merely the logical result of common sense application of the maxim 'try, try again.'" In affirming the district court, the Federal Circuit undertook an extended discussion of common sense as it has been applied to the obviousness inquiry, both before and since the KSR decision.

The Federal Circuit pointed out that application of common sense is not really an innovation in the law of obviousness when it stated, "Common sense has long been recognized to inform the analysis of obviousness if explained with sufficient reasoning." *Perfect Web*, 587 F.3d at 1328 (emphasis added). The Federal Circuit then provided a review of a number of precedential cases that inform the understanding of common sense, including *In re Bozek*, 416 F.2d 1385, 1390 (CCPA 1969) (explaining

that a patent examiner may rely on "common knowledge and common sense of the person of ordinary skill in the art without any specific hint or suggestion in a particular reference") and *In re Zurko*, 258 F.3d 1379, 1383, 1385 (Fed. Cir. 2001) (clarifying that a factual foundation is needed in order for an examiner to invoke "good common sense" in a case in which "basic knowledge and common sense was not based on any evidence in the record"). The Federal Circuit implicitly acknowledged in *Perfect Web* that the kind of strict evidence-based teaching, suggestion, or motivation required in *In re Lee*, 277 F.3d 1338, 1344 (Fed. Cir. 2002), is not an absolute requirement for an obviousness rejection in light of the teachings of *KSR*. The Federal Circuit explained that "[a]t the time [of the Lee decision], we required the PTO to identify record evidence of a teaching, suggestion, or motivation to combine references." However, *Perfect Web* went on to state that even under Lee, common sense could properly be applied when analyzing evidence relevant to obviousness. Citing *DyStar Textilfarben GmbH v. C.H. Patrick Co.*, 464 F.3d 1356 (Fed. Cir. 2006), and *In re Kahn*, 441 F.3d 977 (Fed. Cir. 2006), two cases decided shortly before the Supreme Court's decision in *KSR*, the Federal Circuit noted that although "a reasoned explanation that avoids conclusory generalizations" is required to use common sense, identification of a "specific hint or suggestion in a particular reference" is not.

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F. Known Work in One Field of Endeavor May Prompt Variations of It for Use in Either the Same Field or a Different One Based on Design Incentives or Other Market Forces if the Variations Are Predictable to One of Ordinary Skill in the Art

To reject a claim based on this rationale, Office personnel must resolve the *Graham* factual inquiries. Then, Office personnel must articulate the following:

> (1) a finding that the scope and content of the prior art, whether in the same field of endeavor as that of the applicant's invention or a different field of endeavor, included a similar or analogous device (method, or product);
> (2) a finding that there were design incentives or market forces which would have prompted adaptation of the known device (method, or product);
> (3) a finding that the differences between the claimed invention and the prior art were encompassed in known variations or in a principle known in the prior art;
> (4) a finding that one of ordinary skill in the art, in view of the identified design incentives or other market forces, could have implemented the claimed variation of the prior art, and the claimed variation would have been predictable to one of ordinary skill in the art; and
> (5) whatever additional findings based on the *Graham* factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness.

The rationale to support a conclusion that the claimed invention would have been obvious is that design incentives or other market forces could have prompted one of ordinary skill in the art to vary the prior art in a predictable manner to result in the claimed invention. If any of these findings cannot be made, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art.

Example 1:

The fact pattern in *Dann v. Johnston*, 425 U.S. 219, 189 USPQ 257 (1976) is set forth above in Example 1 in subsection D.

The Court found that the problem addressed by applicant – the need to give more detailed breakdown by a category of transactions – was closely analogous to the task of keeping track of the transaction files of individual business units. *Id.* at 229, 189 USPQ at 261. Thus, an artisan in the data processing area would have recognized the similar class of problem and the known solutions of the prior art and it would have been well within the ordinary skill level to implement the system in the different environment. The Court held that "[t]he gap between the prior art and respondent's system is simply not so great as to render the system nonobvious to one reasonably skilled in the art." *Id.* at 230, 189 USPQ at 261.

Example 2:

The claimed invention in *Leapfrog Enterprises, Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 82 USPQ2d 1687 (Fed. Cir. 2007) was directed to a learning device to help young children read phonetically. The claim read as follows:

An interactive learning device, comprising:

a housing including a plurality of switches;

a sound production device in communication with the switches and including a processor and a memory;

at least one depiction of a sequence of letters, each letter being associable with a switch; and

a reader configured to communicate the identity of the depiction to the processor,

wherein selection of a depicted letter activates an associated switch to communicate with the processor, causing the sound production device to generate a signal corresponding to a sound associated with the selected letter, the sound being determined by a position of the letter in the sequence of letter.

The court concluded that the claimed invention would have been obvious in view of the combination of two pieces of prior art, (1) Bevan (which showed an electro-mechanical toy for phonetic learning), (2) the Super Speak & Read device (SSR) (an electronic reading toy), and the knowledge of one of ordinary skill in the art.

The court made clear that there was no technological advance beyond the skill shown in the SSR device. The court stated that "one of ordinary skill in the art of children's learning toys would have found it obvious to combine the Bevan device with the SSR to update it using modern electronic components in order to gain the commonly understood benefits of such adaptation, such as decreased size, increased reliability, simplified operation, and reduced cost. While the SSR only permits generation of a sound corresponding to the first letter of a word, it does so using electronic means. The combination is thus the adaptation of an old idea or invention (Bevan) using newer technology that is commonly available and understood in the art (the SSR)."

The court found that the claimed invention was but a variation on already known children's toys. This variation presented no nonobvious advance over other toys. The court made clear that there was no technological advance beyond the skill shown in the SSR device. The court found that "[a]ccomodating a prior art mechanical device that accomplishes that goal to modern electronics would have been

reasonably obvious to one of ordinary skill in designing children's learning devices. Applying modern electronics to older mechanical devices has been commonplace in recent years."

Example 3:

The claimed invention in *KSR International Co. v. Teleflex Inc.,* 550 U.S. ___, 82 USPQ2d 1385 (2007) was an adjustable pedal assembly with a fixed pivot point and an electronic pedal-position sensor attached to the assembly support. The fixed pivot point meant that the pivot was not changed as the pedal was adjusted. The placement of the sensor on the assembly support kept the sensor fixed while the pedal was adjusted.

Conventional gas pedals operated by a mechanical link which adjusted the throttle based on the travel of the pedal from a set position. The throttle controlled the combustion process and the available power generated by the engine. Newer cars used computer controlled throttles in which a sensor detected the motion of the pedal and sent signals to the engine to adjust the throttle accordingly. At the time of the invention, the marketplace provided a strong incentive to convert mechanical pedals to electronic pedals, and the prior art taught a number of methods for doing so. The prior art (Asano) taught an adjustable pedal with a fixed pivot point with mechanical throttle control. The prior art ('936 patent to Byler) taught an electronic pedal sensor which was placed on a pivot point in the pedal assembly and that it was preferable to detect the pedal's position in the pedal mechanism rather than in the engine. The prior art (Smith) taught that to prevent the wires connecting the sensor to the computer from chafing and wearing out, the sensor should be put on a fixed part of the pedal assembly rather than in or on the pedal's footpad. The prior art (Rixon) taught an adjustable pedal assembly (sensor in the footpad) with an electronic sensor for throttle control. There was no prior art electronic throttle control that was combined with a pedal assembly which kept the pivot point fixed when adjusting the pedal.

The Court stated that "[t]he proper question to have asked was whether a pedal designer of ordinary skill, facing the wide range of needs created by developments in the field of endeavor, would have seen a benefit to upgrading Asano with a sensor." *Id.* at ___, 82 USPQ2d at 1399. The Court found that technological developments in the automotive design would have prompted a designer to upgrade Asano with an electronic sensor. The next question was where to attach the sensor. Based on the prior art, a designer would have known to place the sensor on a nonmoving part of the pedal structure and the most obvious nonmoving point on the structure from which a sensor can easily detect the pedal's position was a pivot point. The Court concluded that it would have been obvious to upgrade Asano's fixed pivot point adjustable pedal by replacing the mechanical assembly for throttle control with an electronic throttle control and to mount the electronic sensor on the pedal support structure.

Example 4:

The claimed invention in *Ex parte Catan* , 83 USPQ2d 1568 (bd. Pat. App. & Int. 2007), was a consumer electronics device using bioauthentication to authorize sub-users of an authorized credit account to place orders over a communication network up to a pre-set maximum sub-credit limit.

The prior art (Nakano) disclosed a consumer electronics device like the claimed invention, except that security was provided by a password authentication device rather than a bioauthentication device. The prior art (Harada) disclosed that the use of a bioauthentication device (fingerprint sensor) on a consumer electronics device (remote control) to provide bioauthentication information (fingerprint) was known in the prior art at the time of the invention. The prior art (Dethloff) also disclosed that it was known in the art at the time of the invention to substitute bioauthentication for PIN authentication to enable a user to

access credit via a consumer electronics device.

The Board found that the prior art "shows that one of ordinary skill in the consumer electronic device art at the time of the invention would have been familiar with using bioauthentication information interchangeably with or in lieu of PINs to authenticate users." The Board concluded that one of ordinary skill in the art of consumer electronic devices would have found it obvious to update the prior art password device with the modern bioauthentication component and thereby gain, predictably, the commonly understood benefits of such adaptation, that is, a secure and reliable authentication procedure.

(G) Some Teaching, Suggestion, or Motivation in the Prior Art That Would Have Led One of Ordinary Skill To Modify the Prior Art Reference or To Combine Prior Art Reference Teachings To Arrive at the Claimed Invention

To reject a claim based on this rationale, Office personnel must resolve the *Graham* factual inquiries. Then, Office personnel must articulate the following:

(1) a finding that there was some teaching, suggestion, or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings;
(2) a finding that there was reasonable expectation of success; and
(3) whatever additional findings based on the *Graham* factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness.

The rationale to support a conclusion that the claim would have been obvious is that "a person of ordinary skill in the art would have been motivated to combine the prior art to achieve the claimed invention and that there would have been a reasonable expectation of success. *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1360, 80 USPQ2d 1641, 1645 (Fed. Cir. 2006). If any of these findings cannot be made, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art.

The Courts have made clear that the teaching, suggestion, or motivation test is flexible and an explicit suggestion to combine the prior art is not necessary. The motivation to combine may be implicit and may be found in the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved. *Id.* at 1366, 80 USPQ2d at 1649. "[A]n implicit motivation to combine exists not only when a suggestion may be gleaned from the prior art as a whole, but when the 'improvement' is technology-independent and the combination of references results in a product or process that is more desirable, for example because it is stronger, cheaper, cleaner, faster, lighter, smaller, more durable, or more efficient. Because the desire to enhance commercial opportunities by improving a product or process is universal-and even common-sensical-we have held that there exists in these situations a motivation to combine prior art references even absent any hint of suggestion in the references themselves. In such situations, the proper question is whether the ordinary artisan possesses knowledge and skills rendering him *capable* of combining the prior art references." *Id.* at 1368, 80 USPQ2d at 1651.

2143.01 Suggestion or Motivation To Modify the

References [R-6]

I. * PRIOR ART ** > SUGGESTION OF < THE DESIRABILITY OF THE CLAIMED INVENTION

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Obviousness can * be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so. *In re Kahn*, 441 F.3d 977, 986, 78 USPQ2d 1329, 1335 (Fed. Cir. 2006) (discussing rationale underlying the motivation-suggestion-teaching * > test < as a guard against using hindsight in an obviousness analysis). **

In *In re Fulton*, 391 F.3d 1195, 73 USPQ2d 1141 (Fed. Cir. 2004), the claims of a utility patent application were directed to a shoe sole with increased traction having hexagonal projections in a "facing orientation." 391 F.3d at 1196-97, 73 USPQ2d at 1142. The Board combined a design patent having hexagonal projections in a facing orientation with a utility patent having other limitations of the independent claim. 391 F.3d at 1199, 73 USPQ2d at 1144. Applicant argued that the combination was improper because (1) the prior art did not suggest having the hexagonal projections in a facing (as opposed to a "pointing") orientation was the "most desirable" configuration for the projections, and (2) the prior art "taught away" by showing desirability of the "pointing orientation." 391 F.3d at 1200-01, 73 USPQ2d at 1145-46. The court stated that "the prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed…." *Id.* ** In affirming the Board's obviousness rejection, the court held that the prior art as a whole suggested the desirability of the combination of shoe sole limitations claimed, thus providing a motivation to combine, which need not be supported by a finding that the prior art suggested that the combination claimed by the applicant was the preferred, or most desirable combination over the other alternatives. *Id.*

In *Ruiz v. A.B. Chance Co.*, 357 F.3d 1270, 69 USPQ2d 1686 (Fed. Cir. 2004), the patent claimed underpinning a slumping building foundation using a screw anchor attached to the foundation by a metal bracket. One prior art reference taught a screw anchor with a concrete bracket, and a second prior art reference disclosed a pier anchor with a metal bracket. The court found motivation to combine the references to arrive at the claimed invention in the "nature of the problem to be solved" because each reference was directed "to precisely the same problem of underpinning slumping foundations."*Id.* at 1276, 69 USPQ2d at 1690. The court also *rejected* the notion that "an express written motivation to combine must appear in prior art references…." *Id.* at 1276, 69 USPQ2d at 1690.

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II. WHERE THE TEACHINGS OF THE PRIOR ART CONFLICT, THE EXAMINER MUST WEIGH THE SUGGESTIVE POWER OF EACH REFERENCE

The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art, and all teachings in the prior art must be considered to the extent that they are in analogous arts. Where the teachings of two or more prior art references conflict, the examiner must weigh

the power of each reference to suggest solutions to one of ordinary skill in the art, considering the degree to which one reference might accurately discredit another. *In re Young*, 927 F.2d 588, 18 USPQ2d 1089 (Fed. Cir. 1991) (Prior art patent to Carlisle disclosed controlling and minimizing bubble oscillation for chemical explosives used in marine seismic exploration by spacing seismic sources close enough to allow the bubbles to intersect before reaching their maximum radius so the secondary pressure pulse was reduced. An article published several years later by Knudsen opined that the Carlisle technique does not yield appreciable improvement in bubble oscillation suppression. However, the article did not test the Carlisle technique under comparable conditions because Knudsen did not use Carlisle's spacing or seismic source. Furthermore, where the Knudsen model most closely approximated the patent technique there was a 30% reduction of the secondary pressure pulse. On these facts, the court found that the Knudsen article would not have deterred one of ordinary skill in the art from using the Carlisle patent teachings.).

III. FACT THAT REFERENCES CAN BE COMBINED OR MODIFIED ** > MAY NOT BE < SUFFICIENT TO ESTABLISH PRIMA FACIE OBVIOUSNESS

The mere fact that references can be combined or modified does not render the resultant combination obvious unless ** > the results would have been predictable to one of ordinary skill in the art. *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1396 (2007)("If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill."). <

IV. * > MERE STATEMENT < THAT THE CLAIMED INVENTION IS WITHIN THE CAPABILITIES OF ONE OF ORDINARY SKILL IN THE ART IS NOT SUFFICIENT BY ITSELF TO ESTABLISH PRIMA FACIE OBVIOUSNESS

A statement that modifications of the prior art to meet the claimed invention would have been "'well within the ordinary skill of the art at the time the claimed invention was made'" because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993). ** "' > [R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.'" *KSR*, 550 U.S. at ___, 82 USPQ2d at 1396 quoting *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006). <

V. THE PROPOSED MODIFICATION CANNOT RENDER THE PRIOR ART UNSATISFACTORY FOR ITS INTENDED PURPOSE

If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984) (Claimed device was a blood filter assembly for use during medical procedures wherein both the inlet and outlet for the blood were located at the bottom end of the filter assembly, and wherein a gas vent was present at the top of the filter assembly. The prior art reference taught a liquid strainer for removing dirt and water from gasoline and other light oils wherein the inlet and outlet were at the top of the device, and wherein a pet-cock (stopcock) was located at the bottom of the device for periodically removing the collected dirt and water. The reference further taught that the separation is assisted by gravity. The Board concluded the claims were *prima facie* obvious, reasoning that it would have been obvious to turn the reference device upside down. The court reversed, finding that if the prior art device was turned upside down it would be inoperable for its intended purpose because the gasoline to be filtered would be trapped at the top, the water and heavier oils sought to be separated would flow out of the outlet instead of the purified gasoline, and the screen would become clogged.).

"Although statements limiting the function or capability of a prior art device require fair consideration, simplicity of the prior art is rarely a characteristic that weighs against obviousness of a more complicated device with added function." *In re Dance*, 160 F.3d 1339, 1344, 48 USPQ2d 1635, 1638 (Fed. Cir. 1998) (Court held that claimed catheter for removing obstruction in blood vessels would have been obvious in view of a first reference which taught all of the claimed elements except for a "means for recovering fluid and debris" in combination with a second reference describing a catheter including that means. The court agreed that the first reference, which stressed simplicity of structure and taught emulsification of the debris, did not teach away from the addition of a channel for the recovery of the debris.).

VI. THE PROPOSED MODIFICATION CANNOT CHANGE THE PRINCIPLE OF OPERATION OF A REFERENCE

If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959) (Claims were directed to an oil seal comprising a bore engaging portion with outwardly biased resilient spring fingers inserted in a resilient sealing member. The primary reference relied upon in a rejection based on a combination of references disclosed an oil seal wherein the bore engaging portion was reinforced by a cylindrical sheet metal casing. Patentee taught the device required rigidity for operation, whereas the claimed invention required resiliency. The court reversed the rejection holding the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate." 270 F.2d at 813, 123 USPQ at 352.).

2143.02 Reasonable Expectation of Success Is Required [R-9]

A rationale to support a conclusion that a claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded nothing more than predictable results to one of ordinary skill in the art. *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1395 (2007); *Sakraida v. AG Pro, Inc.*, 425 U.S. 273, 282,

189 USPQ 449, 453 (1976); *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57, 62-63, 163 USPQ 673, 675 (1969); *Great Atlantic & P. Tea Co. v. Supermarket Equipment Corp.*, 340 U.S. 147, 152, 87 USPQ 303, 306 (1950).

I. OBVIOUSNESS REQUIRES * A REASONABLE EXPECTATION OF SUCCESS

** > Where there is a reason to modify or combine the prior art to achieve the claimed invention, the claims may be rejected as *prima facie* obvious provided there is also < a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986) (Claims directed to a method of treating depression with amitriptyline (or nontoxic salts thereof) were rejected as *prima facie* obvious over prior art disclosures that amitriptyline is a compound known to possess psychotropic properties and that imipramine is a structurally similar psychotropic compound known to possess antidepressive properties, in view of prior art suggesting the aforementioned compounds would be expected to have similar activity because the structural difference between the compounds involves a known bioisosteric replacement and because a research paper comparing the pharmacological properties of these two compounds suggested clinical testing of amitriptyline as an antidepressant. The court sustained the rejection, finding that the teachings of the prior art provide a sufficient basis for a reasonable expectation of success.); *Ex parte Blanc*, 13 USPQ2d 1383 (Bd. Pat. App. & Inter. 1989) (Claims were directed to a process of sterilizing a polyolefinic composition with high-energy radiation in the presence of a phenolic polyester antioxidant to inhibit discoloration or degradation of the polyolefin. Appellant argued that it is unpredictable whether a particular antioxidant will solve the problem of discoloration or degradation. However, the Board found that because the prior art taught that appellant's preferred antioxidant is very efficient and provides better results compared with other prior art antioxidants, there would have been a reasonable expectation of success.).

II. AT LEAST SOME DEGREE OF PREDICTABILITY IS REQUIRED; APPLICANTS MAY PRESENT EVIDENCE SHOWING THERE WAS NO REASONABLE EXPECTATION OF SUCCESS

Obviousness does not require absolute predictability, however, at least some degree of predictability is required. Evidence showing there was no reasonable expectation of success may support a conclusion of nonobviousness. *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976) (Claims directed to a method for the commercial scale production of polyesters in the presence of a solvent at superatmospheric pressure were rejected as obvious over a reference which taught the claimed method at atmospheric pressure in view of a reference which taught the claimed process except for the presence of a solvent. The court reversed, finding there was no reasonable expectation that a process combining the prior art steps could be successfully scaled up in view of unchallenged evidence showing that the prior art processes individually could not be commercially scaled up successfully.). See also *Amgen, Inc. v. Chugai Pharmaceutical Co.*, 927 F.2d 1200, 1207-08, 18 USPQ2d 1016, 1022-23 (Fed. Cir.), *cert. denied*, 502 U.S. 856 (1991) (In the context of a biotechnology case, testimony supported the conclusion that the references did not show that there was a reasonable expectation of success.); *In re O'Farrell*, 853 F.2d 894, 903, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988) (The court held the claimed method would have been obvious over the prior art relied upon because one reference contained a detailed enabling methodology, a suggestion to modify the prior art to produce the claimed invention, and evidence suggesting the modification would be successful.).

III. PREDICTABILITY IS DETERMINED AT THE TIME THE INVENTION WAS MADE

Whether an art is predictable or whether the proposed modification or combination of the prior art has a reasonable expectation of success is determined at the time the invention was made. *Ex parte Erlich*, 3 USPQ2d 1011 (Bd. Pat. App. & Inter. 1986) (Although an earlier case reversed a rejection because of unpredictability in the field of monoclonal antibodies, the court found "in this case at the time this invention was made, one of ordinary skill in the art would have been motivated to produce monoclonal antibodies specific for human fibroplast interferon using the method of [the prior art] with a reasonable expectation of success." 3 USPQ2d at 1016 (emphasis in original).).

2143.03 All Claim Limitations Must Be Considered> [R-6]

** "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under **35 U.S.C. 103**, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

I. < INDEFINITE LIMITATIONS MUST BE CONSIDERED

>

A claim limitation which is considered indefinite cannot be disregarded. If a claim is subject to more than one interpretation, at least one of which would render the claim unpatentable over the prior art, the examiner should reject the claim as indefinite under **35 U.S.C. 112**, second paragraph (see **MPEP § 706.03(d)**) and should reject the claim over the prior art based on the interpretation of the claim that renders the prior art applicable. *Ex parte Ionescu*, 222 USPQ 537 (Bd. Pat. App. & Inter. 1984) (Claims on appeal were rejected on indefiniteness grounds only; the rejection was reversed and the case remanded to the examiner for consideration of pertinent prior art.). Compare *In re Wilson*, 424 F.2d 1382, 165 USPQ 494 (CCPA 1970) (if no reasonably definite meaning can be ascribed to certain claim language, the claim is indefinite, not obvious) and *In re Steele*, 305 F.2d 859,134 USPQ 292 (CCPA 1962) (it is improper to rely on speculative assumptions regarding the meaning of a claim and then base a rejection under **35 U.S.C. 103** on these assumptions).

II. < LIMITATIONS WHICH DO NOT FIND SUPPORT IN THE ORIGINAL SPECIFICATION MUST BE CONSIDERED

>

When evaluating claims for obviousness under **35 U.S.C. 103**, all the limitations of the claims must be considered and given weight, including limitations which do not find support in the specification as originally filed (i.e., new matter). *Ex parte Grasselli*, 231 USPQ 393 (Bd. App. 1983) *aff'd mem.* 738 F.2d 453 (Fed. Cir. 1984) (Claim to a catalyst expressly excluded the presence of sulfur, halogen, uranium, and a combination of vanadium and phosphorous. Although the negative limitations excluding

these elements did not appear in the specification as filed, it was error to disregard these limitations when determining whether the claimed invention would have been obvious in view of the prior art.).

PROOF OF SERVICE

I hereby certify that two copies of the Brief for Appellants were deposited with the United States Postal Service on February 21, 2014, with sufficient postage as first class mail, in envelopes addressed to the following counsels as follows:

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_____

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CERTIFICATE OF COMPLIANCE

This brief contains 7951 words. Accordingly, this brief satisfies the requirements of the Federal Rule of Federal Rule of Appellate Procedure 32(a)(7)(B).

Dated: February 21, 2013

/s/ Scott A. Horstemeyer

_____

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2014-1179

IN THE UNITED STATES COURT OF APPEALS

FOR THE FEDERAL CIRCUIT

TECH SHELL, INC,

Appellant,

v.

INCASE DESIGNS, INC.

Appellee

Appeal from the Patent Trial and Appeal Board in Reexamination No. 95/001,767

APPENDIX

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INCASE DESIGNS CORP.
Requester

v.

TECH SHELL, INC.[1]
Patent Owner, Appellant

Appeal 2013-009127
Inter partes Reexamination Control 95/001,767
Patent US 7,907,400 B2[2]
Technology Center 3900

Before STEVEN D.A. McCARTHY, DANIEL S. SONG and JAMES P. CALVE, *Administrative Patent Judges*.

SONG, *Administrative Patent Judge*

DECISION ON APPEAL

---

[1] Tech Shell, Inc. is the Patent Owner and the real party in interest (Appeal Brief of Patent Owner (hereinafter "App. Br.") 1).
[2] Patent US 7,907,400 B2 (hereinafter "'400 patent") issued March 15, 2011 to Bekele.

STATEMENT OF THE CASE

Claims 1-8 and 26-39 of the '400 patent are subject to reexamination while claims 9-25 and 40-53 are not subject to reexamination (Right of Appeal Notice[3] (hereinafter "RAN") 1). Each of claims 1-8 and 26-39 subject to reexamination stand rejected (RAN 1). The Patent Owner appeals under 35 U.S.C. §§ 134(b) and 315 from the Examiner's rejections with respect to all of the rejected claims (App. Br. 4). The Requester does not cross-appeal the decisions of the Examiner not adopting certain proposed rejections. We have jurisdiction under 35 U.S.C. §§ 134(b) and 315.

The '400 patent is related to Patent US 7,643,274 which is the subject of Reexamination Control No. 95/001,766 (App. Br. 1-2). Both Patent US 7,643,274 and the subject '400 patent are involved in the legal action *Techshell Inc. v. Jwin Electronics Corporation.*, 3:11-cv-00556-MCR-CJK (N.D. Florida) which has been stayed pending outcome of the reexamination proceedings (App. Br. 2).

We AFFIRM the Examiner's rejections.

The '400 patent is directed to a protective cover for a laptop computer (Abstract). Representative independent claim 1 reads as follows (Claims App'x, italics added):

> 1. An exterior cover for a laptop computer having a display portion and a keyboard portion, comprising:
>
> a first *elastic* planar element for placement on an outside surface of the display portion, the first elastic planar element including:

[3] The Examiner's Answer merely incorporates the RAN by reference. Hence we cite to the RAN herein.

> a raised edge along a portion of a perimeter of the first elastic planar element, wherein the raised edge extends perpendicularly from the first elastic planar element and toward the display portion; and
>
> *a plurality of tabs* located on the raised edge, wherein each tab extends from the raised edge over an inside surface of the display portion so as to grip the display portion; and
>
> a second *elastic* planar element for placement on an outside surface of the keyboard portion, *the second elastic planar element being separate and independent from the first elastic planar element*, the second elastic planar element including:
>
> a raised edge along a portion of a perimeter of the second elastic planar element, wherein the raised edge extends perpendicularly from the second elastic planar element and toward the keyboard portion; and
>
> *a plurality of tabs* located on the raised edge, wherein each tab extends from the raised edge over an inside surface of the keyboard portion so as to grip the keyboard portion.

Independent claim 39 similarly recites "the second elastic planar element being separate and independent from the first elastic element" but merely recites "a tab" for the planar elements rather than a plurality of tabs.

The Examiner rejects the claims under 35 U.S.C. § 103(a) as follows:

1. Claims 1, 2, 4-7 and 26-39 as obvious over Alexander[4] in view of Genest.[5]

2. Claim 3 as obvious over Alexander in view of Genest and Park.[6]

---

[4] U.S. Patent No. 5,835,344 issued November 10, 1998.
[5] U.S. Patent No. 6,480,377 B2 issued November 12, 2002.

3. Claim 8 as obvious over Alexander in view of Genest.

ISSUES

The following issues have been raised in the present appeal.

1. Whether the Examiner erred in finding that Alexander discloses a case body 200 that is separate and independent from a case cover 202.

2. Whether the Examiner erred in finding that Genest discloses a case having "a plurality of tabs" as recited in claim 1.

3. Whether the Examiner erred in concluding that it would have been obvious to one of skill in the art to provide the carrying case of Alexander with tabs disclosed in Genest to result in the invention claimed.

PRINCIPLES OF LAW

"The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 415-16 (2007). If a technique has been used to improve one device and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. *Id.* at 417.

ANALYSIS

In rejecting all of the claims at issue, the Examiner adopted the positions of the Requester as set forth in pages 19-21 and 27-28 of the

---

[6] U.S. Patent No. 6,405,881B1 issued June 18, 2002.

Request for *Inter Partes* Reexamination (RAN 5). The Examiner finds that Alexander discloses most of the structural limitations of independent claim 1, including the limitation "the second elastic planar element being separate and independent from the first elastic planar element." (RAN 8). The Examiner concedes that Alexander fails to disclose the recited tabs but relies on Genest for teaching "a protective case having retaining tabs 44 located on a raised edge" which function to retain the handheld computer (RAN 8-9). The Examiner further reproduces a portion of the Request for *Inter Partes* Reexamination adopted to reject the claim which concludes that:

> [i]t would have been obvious to a person of ordinary skill in the art at the time the invention was made to add the tabs described in Genest to the raised edges of the protective cover in Alexander (e.g., front wall, rear wall, and side walls of the case cover 202 and/or lowercase body 200) so that the protective cover can be more securely attached to the laptop. A person of ordinary skill in the art would be motivated to combine the laptop cover of Alexander with the tabs of Genest because the resulting laptop cover would be more desirable as an improvement on the prior art technique of Alexander using only friction to hold the cover in place, and the resulting cover would have enhanced commercial opportunities over Alexander because it would be more secure and adding tabs involves only routine skill in the art.

(RAN 9).

The Patent Owner disagrees with the Examiner's findings and conclusion in its appeal for the reasons set forth in its brief. We address the various arguments of the Patent Owner *infra*. Only those arguments actually made by the Patent Owner have been considered and any arguments not made are deemed to be waived. *See* 37 C.F.R. § 41.67(c)(1)(vii).

Independent Claim 1

Separate and Independent

The Patent Owner argues that the Examiner erred because "[n]either Alexander nor Genest, either alone or in combination, disclose, teach, or suggest" the clam 1 limitation "the second elastic planar element being separate and independent from the first elastic planar element." (App. Br. 5). The Patent Owner asserts that "Alexander discloses a ***one-piece*** form fitting briefcase for a laptop computer" and "two connection methods, *i.e.*, hinges and clips, ***to join the top and bottom sections of the laptop case***." (App. Br. 6, emphasis in original). In particular, according to the Patent Owner, because Alexander discloses a connector clasp 300 mounted to the lower case body 200 that engages a connector stud 310 on the case cover 202, the case body 200 and the case cover 202 are "***connected***." (App. Br. 6, emphasis in original). This argument is unpersuasive.

Implicit in the Patent Owner's argument is that the limitation "separate and independent" should be interpreted to require the first elastic planar element to be "unconnected" from the second elastic planar element, even by intervening structure or components such as the locking mechanism of Alexander (i.e., connector clasp 300 and the connector stud 310).[7] However, even if the Patent Owner's implicit claim construction is considered to be

[7] We also note that the Patent Owner's implied interpretation of the limitation "separate and independent" so as to preclude any intervening parts that may serve to connect the first and second elastic planar elements is problematic because the cover of the '400 patent also relies on intervening display portion and keyboard portion of the laptop that are hinged together to function, these components "connecting" the first and second elastic planar elements together.

correct, Alexander discloses this limitation because, in the operative configuration wherein the portable computer system of Alexander is in use, the locking mechanism (i.e., connector clasp 300 and the connector stud 310) is not used. As such, the case body 200 and the case cover 202 are "separate and independent" as well as "unconnected" from each other. Furthermore, claim 1 is also open ended because it uses the transitional term "comprising," thereby allowing inclusion of additional components such as a locking mechanism (i.e., connector clasp 300 and the connector stud 310). Correspondingly, the Patent Owner's argument based on the locking mechanism of Alexander is unpersuasive.

The Patent Owner also argues that in Alexander, "the upper case is connected to the lower case by a moveable connection mechanism that is part of the laptop case." (App. Br. 7, *citing* Alexander, col. 5, ll. 37-47). We presume that unlike the locking mechanism discussed *supra*, such connection mechanism is asserted to permanently connect the lower case body 200 and the case cover 202 together. The Patent Owner's assertion is based on a single statement in Alexander which states that "case cover 202 … is movably mounted to the case body 200 at a connector mechanism which is a part of the case C of the laptop computer L." (Alexander, col. 5, ll. 37-41). Hence, the Patent Owner's position is that because Alexander discloses a connector mechanism, it does not disclose "separate and independent" planar elements as required by the claims (App. Br. 7). As noted *supra*, the Examiner's position is that "Fig. 3 of Alexander clearly discloses an exterior cover for a laptop computer, the exterior cover

comprising a lower case body 200 and a *separate and independent* case cover 202." (RAN 8, emphasis in original).

We agree with the Examiner's findings and we are not persuaded by the Patent Owner's arguments for various reasons. Firstly, it would be apparent to a person of ordinary skill in the art that the statement of Alexander relied upon by the Patent Owner includes a typographical error because the laptop computer L does not have a carrying case C. *See In re Yale*, 434 F.2d 666, 668-69 (CCPA 1970) (holding that an obvious typographical error in a chemical formula was not a disclosure of the compound identified by the erroneous formula). The specification and Figure 3 of Alexander discloses that the portable computer system "P" includes a "carrying case C," and that the disclosed "laptop computer L" is contained in a "housing H" which is "engagingly fitted" into the carrying case C (*see* Alexander, col. 2, ll. 52-56; col. 5, l. 37; Fig. 3). Correspondingly, it is the portable computer system P that includes a carrying case C into which the laptop L is received, and it is clear that the laptop computer L does not have a carrying case C. Thus, the statement of Alexander relied upon by the Patent Owner stating "case C of the laptop computer L" is internally inconsistent with the remainder of the specification and Figure 3 (Alexander col. 5, l. 41).

The error in the singular statement of Alexander relied upon by the Patent Owner is further confirmed by the immediately following sentence of Alexander which states "[a] suitable connector mechanism, for example, is provided in the form of a pair of hinged or pivoted connectors 204 (FIG. 3) at rear side portions of the laptop computer." (Alexander, col. 5, ll. 41-47;

Figure 3; *see also* Comments by Third Party Requester, filed August 9, 2012, pgs. 3-4). The pivoted connectors 204 identified are the hinges that pivotably connect the display panel 280 of housing H of the laptop L to the remainder (i.e., keyboard portion) of the laptop L (*see* Alexander, col. 7, ll. 15-18; Fig. 3).

The Patent Owner also directs our attention to claim 1 of Alexander which recites "a case cover movabl[y] mounted with said lower case body" and asserts that this limitation evinces that Alexander fails to disclose a first elastic planar element that is separate and independent from a second elastic planar element (App. Br. 7-8). The Patent Owner asserts that "the case cover and lower case body *must* be mounted to each other in order to operate as recited, *i.e.*, they must be connected via, *e.g.*, a hinge so that these two pieces of the case can *open and close*," as also recited in claim 1 (App. Br. 9, emphasis in original).

However, the Patent Owner overlooks the fact that the recited movable mounting of the case cover/case body, and opening/closing thereof, are entirely attainable in the apparatus of Alexander *without a separate hinge* therebetween because the Alexander patent and its claim 1 are directed to "[a] portable computer system" which not only includes the carrying case C *but also includes the laptop computer L itself*. There is no dispute that the case cover 202 is movable relative to the lower case body 200 when these components are attached to the laptop L which is a component of Alexander's portable computer system P. Indeed, the specification of Alexander discloses that "the display panel housing 280 and its fitted case cover 202 are … pivotally movable upwardly at hinged connectors 204 with

respect to the remainder of the housing H and case C." (Alexander, col. 7, ll. 25-28). Correspondingly, the carrying case C does open and close as mounted to the laptop L of the portable computer system P, both the carrying case C and the laptop L being components thereof and the subject of claim 1 of Alexander. Hence, it is entirely consistent and natural that claim 1 (of Alexander) would recite that the case cover is movably mounted with the lower case body, and that the case C opens and closes, the pivoted connectors 204 being part of the portable computer system P.

The Patent Owner further asserts that "Examiner has misinterpreted Figure 3 of Alexander" because Figure 3 merely shows an exploded view, so it cannot support the finding that the case body 200 and the case cover 202 are separate and independent parts (App. Br. 9). The Patent Owner also argues that "the hinged connector mechanisms 204 are an ***example*** of the type of connector mechanism that can be used to movably mount the case body 200 to the case cover 202." (App. Br. 8-9, emphasis in original).

However, these arguments are unsupported by the preponderance of the evidence and would require us to accept the unlikely proposition that Figure 3 which illustrates in detail the numerous features of the carrying case C (and discusses them in the specification) would omit an illustration of a hinge that connects the case body 200 and the case cover 202 and performs the critical function of opening and closing the carrying case C. As noted, Figure 3 and the detailed discussion thereof in Alexander do not illustrate or identify any "connector mechanism" other than the pair of pivoted connectors 204 that are part of the laptop computer L of the portable computer system P to which Alexander is directed (*see* Alexander, col. 7, ll.

15-18; Fig. 3). Thus, a person of ordinary skill in the art would understand that Alexander and Figure 3 disclose pivoted connectors 204 of the laptop L as functioning to movably open and close the case body 200 and the case cover 202 of the carrying case C. *See In re Aslanian*, 590 F.2d 911, 914 (CCPA 1979) (drawings can be relied upon for what they reasonably disclose and suggest to one of ordinary skill in the art). Importantly, while acknowledgement in Alexander that the pivoted connectors 204 are an "example" leaves open the possibility that other embodiments of the portable computer system P may use different configurations of the pivoted connectors (i.e., hinges) in order to effectuate the opening and closing of the carrying case C, that invitation for variation does not detract from the disclosure of Alexander that discloses the use of pivoted connectors 204 of the laptop L for this very purpose.

Thus, in view of the above, as the Examiner found, we likewise find that the lower case body 200 and the case cover 202 of Alexander are "separate and independent" as shown in Figure 3.

Tabs

The Patent Owner also asserts that the Examiner erred in rejecting claim 1 asserting deficiencies with respect to the secondary reference Genest. In particular, the Patent Owner notes that Genest discloses "a device using *a combination* of *retaining tabs* 44 and *a movable housing portion* 49 complete with *a locking mechanism* 50 and *a slide switch* 52 *to retain the handheld computer.*" (App. Br. 11, emphasis in original). According to the Patent Owner, the retaining tabs 44 therefore "*do not deform or move* with

the body of the case" but instead, "are *stationary protrusions.*" (App. Br. 12, emphasis in original). The Patent Owner argues that in contrast, claim 1 of the '400 patent recite that the first and second planar elements are "elastic" and, thus, it is this "elastic nature of the planar elements [that] allows the tabs to move with the body of the case for entry of the electronic device." (App. Br. 13, *quoting* col. 9, ll. 41-48).

However, the Patent Owner's argument is not persuasive because, as noted by the Examiner, "none of the claims under reexamination recite the language 'the tabs deform or move with the body of the case …', nor do any claims recite the particular manner of entry of an electronic device." (RAN 10). Indeed, the Patent Owner argues limitations not present in the claims and imports limitations of the embodiment described in the specification of the '400 patent to assert that Genest fails to disclose the claimed invention. *See In re Self*, 671 F.2d 1344, 1348 (CCPA 1982); *see also Superguide Corp. v. DirecTV Enterprises*, Inc., 358 F.3d 870, 875 (Fed. Cir. 2004):

> Though understanding the claim language may be aided by the explanations contained in the written description, it is important not to import into a claim limitations that are not a part of the claim. For example, a particular embodiment appearing in the written description may not be read into a claim when the claim language is broader than the embodiment.

Clearly, the retaining tabs 44 of Genest are disclosed therein as functioning to retain the handheld computer as required by claim 1 (Genest, col. 9, ll. 55-62; Fig. 1). Whereas the locking mechanism 50 is used in conjunction therewith, claim 1 of the '400 patent does not preclude other components being used in combination with the recited plurality of tabs to retain the first and second planar elements. The claim also does not require

that the recited tabs deflect during insertion of the retained computer component.

The Patent Owner also asserts that because Alexander states that "[b]oth the lower case body 200 and the cover 202 are preferably formed of a molded synthetic resin, preferably a suitable polypropylene, of a suitable **rigidity** and strength," it discloses a rigid carrying case. (App. Br. 13, *quoting* Alexander, col. 5, ll. 44-47 with emphasis added). The Patent Owner's argument is unpersuasive.

Firstly, contrary to the Patent Owner's assertion, suggesting "suitable rigidity and strength" (*id.*) does not mean that the material should be absolutely "rigid" so as to be non-deformable or inelastic. Rather, the teaching of Alexander is that the material should be selected so that it is "suitable" in both rigidity and strength so that the components of the case perform their intended function described therein. Secondly, Alexander discloses that the appropriate material is "polypropylene" which is one of the materials that the specification of the Patent Owner's '400 patent describes as being suitable for the first and second elastic planar elements disclosed therein (*compare* Alexander, col. 5, ll. 44-47 *with* '400 patent, col. 5, ll. 7-10). In this regard, in describing the planar sheets, the specification of the '400 patent refers to these sheets as "*rigid* planar sheets 102 and 112" that may be manufactured using various plastics (col. 5, l. 66-col. 6, l. 12, emphasis added). Correspondingly, it is clear that even the inventors of the Patent Owner's '400 patent considered rigidity and elasticity to be a matter of degree and that a component/material may be accurately described as being rigid while also being described as elastic.

Finally, the Patent Owner appears to argue that the Examiner has failed to articulate an obviousness rationale in support of the rejection based on the combination of Alexander and Genest (App. Br. 12). However, as noted *supra*, the Examiner adopted the rationale articulated in the Request for *Inter Partes* Reexamination (*see* RAN 8-9). In this regard, as reproduced *supra*, the rationale is that the combination suggested would have been obvious, *inter alia*, "so that the protective cover can be more securely attached to the laptop," that it would "improve[] on the prior art technique of Alexander using only friction to hold the cover in place," and that "adding tabs involves only routine skill in the art." (RAN 9). We agree and find the articulated rationale sufficient to support the conclusion of obviousness.

In view of the above, we conclude that the Examiner did not err in rejecting claim 1 as obvious over the combination of Alexander and Genest. The invention of claim 1 is merely a "combination of familiar elements according to known methods" and "does no more than yield predictable results." *KSR*, 550 U.S. at 415-16. The provision of tabs in a protective case is a known technique and would be within the skill of those in the art. *Id.* at 417. Therefore, the Examiner's rejection of claim 1 is affirmed.

Dependent Claims 2, 4-8 and 26-38

The Patent Owner asserts the patentability of these claims based on their ultimate dependency on independent claim 1 (App. Br. 14). Hence, these claims fall with claim 1.

Independent Claim 39

The Patent Owner repeats substantively the same arguments as those proffered with respect to independent claim 1 to assert patentability of claim 39 (App. Br. 14-23). For the reasons discussed *supra*, these arguments are unpersuasive. Hence, we affirm the Examiner's rejection of claim 39.

Dependent Claim 3

The Patent Owner asserts the patentability of claim 3 based on its ultimate dependency on independent claim 1 (App. Br. 14). Hence, claim 3 also falls with claim 1.

CONCLUSIONS

1. The Examiner did not err in finding that Alexander discloses a case body 200 that is separate and independent from a case cover 202.

2. The Examiner did not err in finding that Genest discloses a case having "a plurality of tabs" as recited in claim 1.

3. The Examiner did not err in concluding that it would have been obvious to one of skill in the art to provide the carrying case of Alexander with tabs disclosed in Genest to result in the invention claimed.

ORDER

The Examiner's rejections of claims 1-8 and 26-39 are AFFIRMED.

Requests for extensions of time in this *inter partes* reexamination proceeding are governed by 37 C.F.R. § 1.956.

Appeal 2013-009127
Reexamination Control 95/001,767
Patent US 7,907,400 B2

AFFIRMED

peb

Third Party Requester:

MITCHELL + COMPANY, LAW OFFICES
ATTN: JIGANG JIN
4 EMBARCADERO CENTER, SUITE 1400
SAN FRANCISCO, CA 94111

Patent Owner:

THOMAS HORSTEMEYER, L.L.P.
400 INTERSTATE NORTH PARKWAY
SUITE 1500
ATLANTA, GEORGIA 30339

Claims Subject to Reexamination

1. An exterior cover for a laptop computer having a display portion and a keyboard portion, comprising:

a first elastic planar element for placement on an outside surface of the display portion, the first elastic planar element including:

a raised edge along a portion of a perimeter of the first elastic planar element, wherein the raised edge extends perpendicularly from the first elastic planar element and toward the display portion; and

a plurality of tabs located on the raised edge, wherein each tab extends from the raised edge over an inside surface of the display portion so as to grip the display portion; and

a second elastic planar element for placement on an outside surface of the keyboard portion, the second elastic planar element being separate and independent from the first elastic planar element, the second elastic planar element including:

a raised edge along a portion of a perimeter of the second elastic planar element, wherein the raised edge extends perpendicularly from the second elastic planar element and toward the keyboard portion; and

a plurality of tabs located on the raised edge, wherein each tab extends from the raised edge over an inside surface of the keyboard portion so as to grip the keyboard portion.

2. The exterior cover of claim 1, wherein the exterior cover is comprised of an elastic plastic material.

3. The exterior cover of claim 2, wherein the exterior cover is comprised of a colored, transparent plastic material.

4. The exterior cover of claim 1, wherein the first and second elastic planar elements comprise a substantially rectangular shape.

5. The exterior cover of claim 4, wherein the plurality of tabs of the first elastic planar element comprise four tabs.

6. The exterior cover of claim 5, wherein the plurality of tabs of the second elastic planar element comprise three tabs.

7. The exterior cover of claim 6, wherein the raised edge of the second elastic planar element includes at least one orifice for allowing access to a removable media port in the keyboard portion.

8. The exterior cover of claim 7, wherein each of the plurality of tabs of the first and second elastic planar elements extend from about one millimeter to about two millimeters from the raised edge.

26. The exterior cover of claim 1, wherein the junction of the raised edge and the first planar element is a rounded corner.

27. The exterior cover of claim 1, wherein the junction of the raised edge and the second planar element is a rounded corner.

28. The exterior cover of claim 1, wherein the plurality of tabs on the raised edge of the first planar element extend perpendicularly from the raised edge.

29. The exterior cover of claim 28, wherein the plurality of tabs extend over an inside surface of the display portion.

30. The exterior cover of claim 29, wherein the plurality of tabs grip the inside surface of the display portion.

31. The exterior cover of claim 1, wherein the plurality of tabs on the raised edge of the second planar element extend perpendicularly from the raised edge.

32. The exterior cover of claim 31, wherein the plurality of tabs extend over an inside surface of the keyboard portion.

33. The exterior cover of claim 32, wherein the plurality of tabs grip the inside

surface of the keyboard portion.

34. The exterior cover of claim 1, wherein the plurality of tabs on the raised edge of the first planar element extend from the raised edge at an angle of less than ninety degrees.

35. The exterior cover of claim 1, wherein the plurality of tabs on the raised edge of the second planar element extend from the raised edge at an angle of less than ninety degrees.

36. The exterior cover of claim 1, wherein the plurality of tabs on the raised edge of the first planar element extend from the raised edge at an angle of more than ninety degrees.

37. The exterior cover of claim 1, wherein the plurality of tabs on the raised edge of the second planar element extend from the raised edge at an angle of more than ninety degrees.

38. The exterior cover of claim 1, wherein the keyboard portion comprises a QWERTY keyboard.

39. An exterior cover for a laptop computer including a display portion and a keyboard portion, comprising:

a first elastic planar element for placement on an outside surface of the display portion, the first elastic planar element comprises a raised edge along a portion of a perimeter of the first elastic planar element and a tab on the raised edge, wherein the tab extends over an inside surface of the display portion; and

a second elastic planar element for placement on an outside surface of the keyboard portion, the second elastic planar element being separate and independent from the first elastic planar element, the second elastic planar element comprises a raised edge along a portion of a perimeter of the second elastic planar element and a tab on the raised edge, wherein the tab extends over an inside surface of the keyboard portion.

Prosecution History Ser. No. 95/001.767

Date	Document
09/16/2011	REQUEST FOR *INTER PARTES* REEXAMINATION
10/06/2011	NOTICE OF FAILURE TO COMPLY WITH *INTER PARTES* REEXAMINATION REQUEST FILING REQUIREMENTS
10/17/2011	NOTICE OF ASSIGNMENT OF *INTER PARTES* REEXAMINATION REQUEST
10/17/2011	NOTICE OF *INTER PARTES* REEXAMINATION REQUEST FILING DATE
10/18/2011	DECISION VACATING NOTICE OF FIALURE TO COMPLY
12/13/2011	ORDER GRANTING REQUEST FOR *INTER PARTES* REEXAMINATION
12/13/2011	OFFICE ACTION
01/13/2012	PETITION FOR REVIEW OF DECISIONS TO NOT REEXAMINATION CERTAIN CLAIMS OF A PATIENT ORDERED FOR *INTER PARTES* REEXAMINATION
01/13/2012	LETTER TO CHANGE DEPOSIT ACCOUNT
01/18/2012	RESPONSE TO OFFICE ACTION
02/17/2012	THIRD PARTY REQUESTER COMMENTS
03/23/2012	DECISION ON PETITION
05/03/2012	INFORMATION DISCLOSURE STATEMENT
06/14/2012	ACTION CLOSING PROSECUTION
07/13/2012	PATENT OWNER COMMENTS AFTER ACTION CLOSING PROSECUTION
08/09/2012	THIRD PARTY REQUESTER COMMENTS
12/11/2012	RIGHT OF APPEAL NOTICE
01/03/2013	NOTICE OF APPEAL - OWNER
02/26/2013	APPEAL BRIEF - OWNER
03/13/2013	EXAMINER'S ANSWER
07/24/2013	PTAB DOCKETING NOTICE
09/13/2013	PTAB DECISION ON APPEAL

Requester is the real party in interest responsible for filing the reexamination request, and this request is being filed by an attorney acting in a representative capacity pursuant to 37 C.F.R. § 1.34(a).

Pursuant to 37 C.F.R. § 1.915(b)(6), a certificate of service is herein attached with this request. And pursuant to 37 C.F.R. § 1.915(b)(7), Requester hereby certifies that the estoppel provisions of 37 C.F.R. § 1.907 do not prohibit *inter partes* reexamination.

(*i.e.* to "grip it"). *See, e.g.*, '400 Patent, Claim 1.

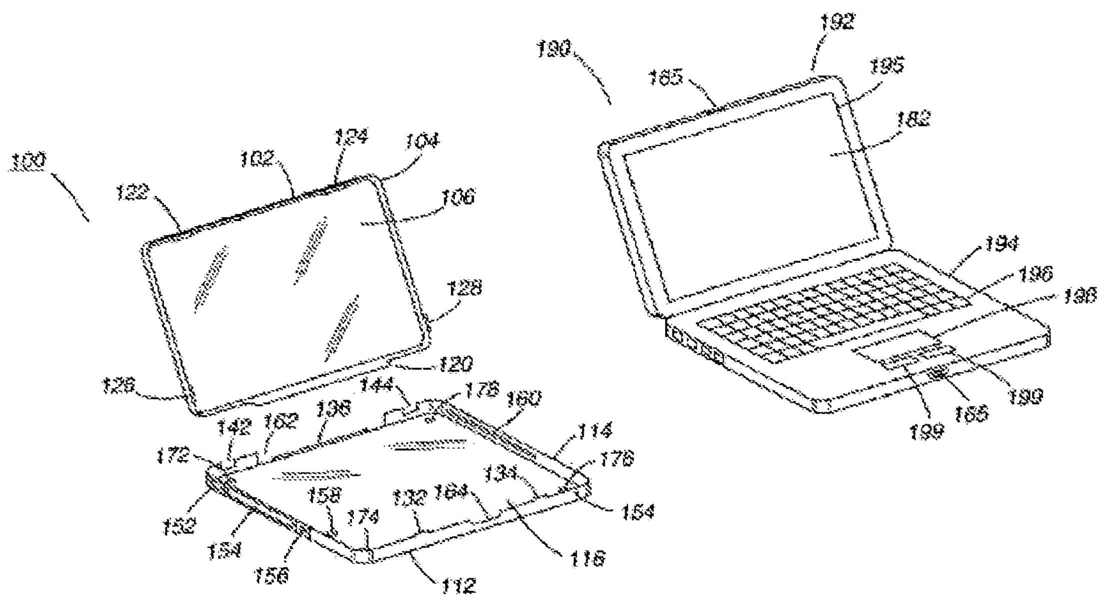

FIG. 1

No prior art references or combination of prior art references were considered by the examiner during the prosecution of the application that resulted in the '400 Patent that disclosed two separate rectangular pieces with raised edges and tabs on those edges that extend over the inside surface of a laptop's display or keyboard portion for holding the cover in place. **However, this disclosure is found in combinations of prior art references that were not considered by the examiner** during the prosecution of the application that resulted in the '400 Patent.

IV. Prior Art References Raising Substantial New Questions of Patentability

Requester submits that the following references raise substantial new questions of patentability concerning the all claims of the '400 Patent.

1). U.S. Pat. No. 5,835,344 filed by Alexander on September 18, 1996 and entitled "Portable Computer System with Integral Carrying Case" ("Alexander"), attached as Exhibit 2;

2). U.S. Pat. No. 6,480,377 filed by Genest et al. on Jan. 4, 2001 and entitled "Protective Case with a Keyboard for Handheld Computer" ("Genest"), attached as Exhibit 3;

3). U.S. Pat. No. D446,196, filed by Chamberlain et al. on Aug. 21, 2000 and entitled "Snap-On Cover for Personal Communication Device" ("Chamberlain"), attached as Exhibit 4; and

4). Printed publication of webpage razr-seethru.html dated December 25, 2005 and entitled "See-Thru Sexy Hard Case 3-Pack" by Speck Products (the "Speck See-Thru Sexy Hard Case publication"), attached as Exhibit 5.

V. List of Substantial New Questions of Patentability

Reexamination should be granted; there are substantial new questions of patentability as to all of the '400 Patent's claims because:

1). Claims 1-53 are invalid as obvious under 35 U.S.C.A. § 103 over Alexander in view of Genest.

2). Claims 1-53 are invalid as obvious under 35 U.S.C.A. § 103 over Alexander in view of Chamberlain.

3). Claims 1-53 are invalid as obvious under 35 U.S.C.A. § 103 over Alexander in view of the Speck See-Thru Sexy Hard Case publication.

4). Claims 1-53 are invalid as obvious under 35 U.S.C.A. § 103 over the Speck See-Thru Sexy Hard Case publication in view of Alexander.

VI. Explanation in Support of Substantial New Questions of Patentability

A. Claims 1-53 are invalid as obvious under 35 U.S.C.A. § 103 over Alexander in view of Genest

The invention claimed by the '400 Patent would have been obvious to a person of ordinary skill in the art at the time the invention in light of Alexander and Genest. The Alexander patent was filed on Sep. 18, 1996 and issued on Nov. 10, 1998. Thus it is prior art to the '400 Patent under 35 U.S.C. §§ 102(a) and (b). Alexander was considered on the record during the prosecution of the application that resulted in the '400 Patent. The Genest Patent was filed on Jan. 4, 2001 and issued on Nov. 12, 2002. As such, it is prior art to the '400 Patent under 35 U.S.C. §§ 102 (a) and (b). Genest was not made of record during the original

prosecution of the '400 Patent. **Thus, the combination of Alexander and Genest was not before the examiner during the prosecution of the '400 Patent,** nor is this combination cumulative of any other references considered by the examiner during the prosecution of the application that resulted in the '400 Patent.

Alexander discloses a laptop protective case that has a display portion (*i.e.*, "case cover 202") and a keyboard portion (*i.e.*, "lower case body 200"). Alexander, column 5 lines 38-40; Fig. 3. The case cover 202 and the lower case body 200 each have raised edges (*e.g.*, front wall, rear wall, side walls, etc.) along the perimeter. Alexander, column 5 lines 48-50; column 7 lines 6-9; Fig. 3. Alexander further discloses that the protective case can be formed of polypropylene, a form of plastic. Alexander, column 5 lines 44-47.

Alexander does not, however, disclose the use of a plurality of tabs on the raised edges to hold the cover to the laptop. Instead, the dimensions of the cover are slightly greater than the dimensions of the laptop. *See* Alexander, column 5 lines 55-57. As such, the cover is held onto the laptop using "frictional or mechanical engagement." Alexander, column 5 lines 60-65.

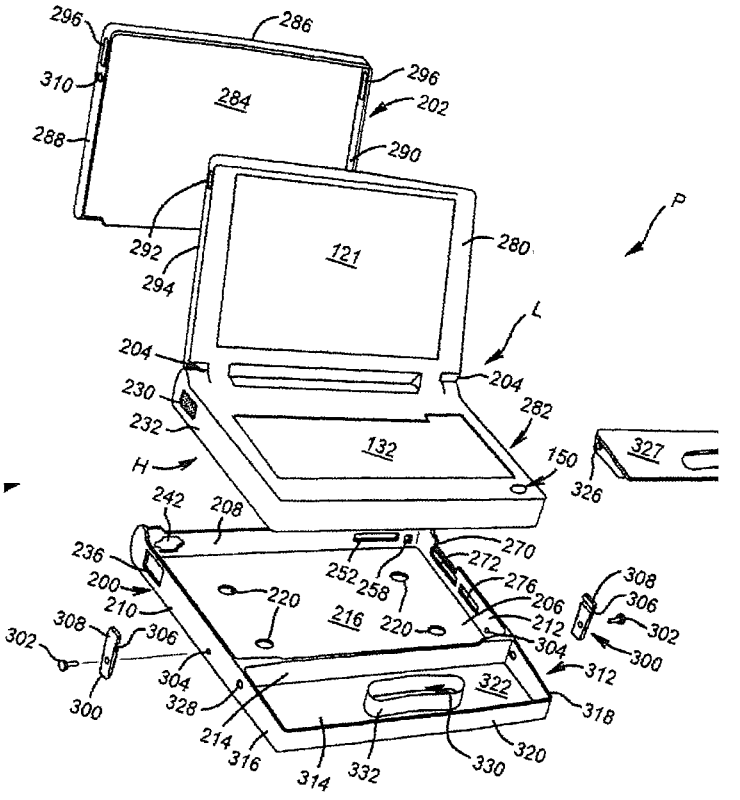

FIG. 3

During prosecution the examiner rejected the claims originally proposed in the application that resulted in the '400 Patent as obvious under 35 U.S.C.A. § 103 over Alexander in view of U.S. Pat. No. 5,682,993 ("Song"). Song disclosed a hinged laptop cover in which the cover was held onto the laptop by a plurality of hooks (or "clips") that are inserted into the body of the laptop. Specifically, Song disclosed that:

> A plurality of clips 16 are attached to opposite edges of the upper tray 12 and lower tray 14 for engaging small grooves 17 and 18 hollowed into the housing 21 of a portable computer to affix the cover into the housing. When the upper tray 12 of the multipurpose cover 19 is lifted, a hinged display screen customarily covering the computer keyboard is simultaneously opened by the clips 16 engaging grooves 17 and 18 formed in the computer housing 21.

Song, column 3 lines 27-34. Song thus discloses an attachment mechanism that relies on "hollowing" out interior grooves (17 and 18) into the laptop's side walls, and then clipping the cover to those interior grooves as shown in Figure 5.

The patentee amended the claims in response to this rejection. Prior to amendment, the claimed laptop cover encompassed all tabs that extended from any portion of the raised edge "for gripping" the display and keyboard portions of the laptop. Following amendment, the patentee *narrowed* the claims to only encompass tabs that extend "from the raised edge **over an inside surface**" of the display and keyboard portions of the laptop "so as to grip" that portion of the laptop. *See* Amendment and Response to Office Action, dated Sept. 16, 2010.

Thus, to overcome an obviousness rejection, the patentee narrowed the claims to only encompass laptop covers in which the tabs rest on the surface of the display and keyboard portions of the laptop, as opposed to hooking or clipping the cover to interior grooves that had been cut into the laptop itself. In light of this narrowing amendment, the examiner's obviousness rejection was traversed.

However, extending tabs over the interior surface of the electronic product to be covered was well-known in the prior art. Specifically, Genest discloses a protective case for a handheld computer that uses tabs (44) that extend over the interior surface of the device to hold the cover to the computer. *See* Figure 1 of Genest. The protective cover includes a computer attachment portion (14) for receiving and protecting the computer, and a computer cover portion (16) for receiving a keyboard as described in column 9 at lines 36-39. The computer attachment portion (14) has raised edges (*e.g.*, side walls 42) as well as retaining portions 44 (*i.e.* tabs) extending downwardly from a top wall over an inside surface to assist in releasably retaining the handheld computer, as described in column 9, lines 46-50 and 55-58, and shown in Figure 1.

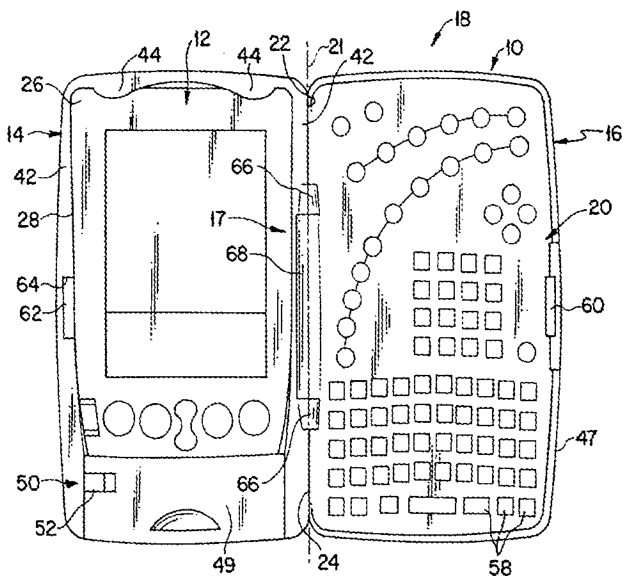

FIG. 1

The handheld computer cover of Genest is analogous prior art to the laptop covers of the '400 Patent and Alexander. As determined by the Federal Circuit, there are two separate tests that "define the scope of analogous prior art: (1) whether the art is from the same field of endeavor, regardless of the problem addressed and, (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved." *In re Bigio*, 381 F.3d 1320, 1325–26, 72 U.S.P.Q.2d 1209 (Fed. Cir. 2004). A determination of the relevant field of endeavor merits an assessment of the function and structure of the invention. *Id.* And it is "necessary to consider

'the reality of the circumstances' – in other words, *common sense* – in deciding in which fields a person of ordinary skill would reasonably be expected to look for a solution to the problem facing the inventor." *Id.*

The laptop cover of the '400 Patent, the laptop cover of Alexander, and the handheld computer cover of Genest are all in the same field of endeavor: protective cases for portable consumer electronics, including laptop computers, hand held computers, mobile phones, and tablet computers. The need and means for adding an exterior cover to a portable electronic device, whether to protect it from damage, to add a decorative appearance, or both is similar or essentially the same. *Compare* '400 Patent at column 1, lines 43-44 (""One problem that users often encounter with laptop computers is wear and tear on the exterior of the laptop.") *with* Genest at column 1 lines 22-27 ("[V]arious protective cases have been developed to provide additional protection . . . These cases enclosed the outer shell and provide . . protection against marring or scratching of the outer shell."). *See also* Declaration of Joe Sung-Ho Tan (attached herein as Exhibit 6) at ¶¶ 8-9.

And even if Genest was not within the field of the inventor's endeavor, it is still reasonably pertinent to the particular problem with which the inventor was involved A person of ordinary skill in the art at the time the invention was made that was faced with creating an improved protective case for a laptop computer would not have created it from whole cloth, nor would she have only limited her inquiry to prior art laptop covers, but rather would look to protective cases for other consumer electronic products to determine solutions to common problems, such as wear and tear on the product's exterior. *See* Declaration of Joe Sung-Ho Tan at ¶¶ 10-12.

Accordingly, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to add the tabs described in Genest to the raised edges of the protective cover in Alexander (*e.g.*, front wall, rear wall, and side walls of the case cover 202 and/or lower case body 200) so that the protective cover can be more securely attached to the laptop. A person of ordinary skill in the art **would be motivated to combine** the laptop cover of Alexander with the tabs of Genest because the resulting laptop cover would be more desirable as an improvement on the prior art technique of Alexander using only friction to hold the cover in place. The resulting cover would have enhanced commercial opportunities over Alexander because it would be more secure and adding tabs involves only routine skill in the art. As the Federal Circuit has determined:

> **[A]n implicit motivation to combine exists . . . when the "improvement" is technology-independent and the combination of references results in a product or process that is more desirable**, for example because it is stronger, cheaper, cleaner, faster, lighter, smaller, more durable, or more efficient. Because the desire to enhance commercial opportunities by improving a product or process is universal - and even common-sensical - we have held that there exists in these situations a motivation to combine prior art references even absent any hint of suggestion in the references themselves. In such situations, the proper question is whether the ordinary artisan possesses knowledge and skills rendering him ***capable*** of combining the prior art references.

DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co., 464 F.3d 1356, 1368, 80 U.S.P.Q.2d 1641, 1651 (Fed. Cir. 2006) (emphasis added); *see also* Declaration of Joe Sung-Ho Tan at ¶ 10 ("Adapting the design for one [portable consumer electronic] device, for example a protective cover for a cell phone, for use in providing a protective cover for another such device, for example a laptop, is a relatively trivial endeavor requiring no more than ordinary skill in the art of product design.")

Thus, Alexander in view of Genest raises a substantial new question of patentability of claims 1-53 of the '400 Patent.

OFFICE ACTION IN INTER PARTES REEXAMINATION	Control No.	Patent Under Reexamination
	95/001,767	BEKELE ET AL.
	Examiner	Art Unit
	DAVID O. REIP	3993

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address. --

Responsive to the communication(s) filed by:
Patent Owner on _____
Third Party(ies) on 16 September, 2011

RESPONSE TIMES ARE SET TO EXPIRE AS FOLLOWS:

For Patent Owner's Response:
2 MONTH(S) from the mailing date of this action. 37 CFR 1.945. EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.956.
For Third Party Requester's Comments on the Patent Owner Response:
30 DAYS from the date of service of any patent owner's response. 37 CFR 1.947. NO EXTENSIONS OF TIME ARE PERMITTED. 35 U.S.C. 314(b)(2).

All correspondence relating to this inter partes reexamination proceeding should be directed to the **Central Reexamination Unit** at the mail, FAX, or hand-carry addresses given at the end of this Office action.

This action is not an Action Closing Prosecution under 37 CFR 1.949, nor is it a Right of Appeal Notice under 37 CFR 1.953.

PART I. THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☒ Notice of References Cited by Examiner, PTO-892
2. ☒ Information Disclosure Citation, PTO/SB/08
3. ☐ _____

PART II. SUMMARY OF ACTION:

1a. ☒ Claims 1-8 and 26-39 are subject to reexamination.
1b. ☒ Claims 9-25 and 40-53 are not subject to reexamination.
2. ☐ Claims _____ have been canceled.
3. ☐ Claims _____ are confirmed. [Unamended patent claims]
4. ☐ Claims _____ are patentable. [Amended or new claims]
5. ☒ Claims 1-8 and 26-39 are rejected.
6. ☐ Claims _____ are objected to.
7. ☐ The drawings filed on _____ ☐ are acceptable ☐ are not acceptable.
8. ☐ The drawing correction request filed on _____ is: ☐ approved. ☐ disapproved.
9. ☐ Acknowledgment is made of the claim for priority under 35 U.S.C. 119 (a)-(d). The certified copy has: ☐ been received. ☐ not been received. ☐ been filed in Application/Control No _____.
10. ☐ Other _____

INTER PARTES REEXAMINATION

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Alexander in view of Genest

The third party requester ("3PR") proposed rejection of all of claims 1-53 under 35 USC 103(a) as being obvious over Alexander in view of Genest. In the Decision on Request, an RPL showing was made for claims 1, 2, 4-7 and 26-39. Accordingly, 3PR's proposed rejections of claims 1, 2, 4-7 and 26-39 as being obvious over Alexander in view of Genest are **adopted** for reasons set forth in the request for reexamination, on pages 19-21 and 27-28, which are hereby incorporated by reference.

Additionally, the following rejections are set forth by the examiner:

As to claim 3 -- Neither Alexander nor Genest teach colored, transparent plastic material. However, U.S. Pat. No. 6,405,881 to Park (hereinafter "Park") teaches a simple plastic container made from colored transparent plastic – see col. 2, lines 59-62 —"which would allow a person to easily see the contents through the outer walls of each container." Thus, it would have been obvious to one of ordinary skill in the art, in view of Alexander as modified by Genest, to make the protective cover of Alexander out of colored transparent plastic, as taught by Park, so that the computer company logo

and/or identifying indicia (such as a serial number) can be seen through the cover without having to remove the cover.

As to claim 8 – Fig. 1 of Genest does not explicitly teach what is missing from Alexander, i.e. tabs that extend "from about one millimeter to about two millimeters from the raised edge" as recited in the claim. Genest is silent as to the dimension of tabs 44. However, apart from the tab dimensional language in claims 8, 15 and 20 of the '400 patent, there is no additional disclosure in the body of the specification as to the dimensional range of the tabs or any stated criticality to the dimensional range of the tabs. Therefore, one skilled in the art, in possession of the Genest teaching of tabs along at least one edge of a protective cover for aiding in the retention of the protective cover on an electronic device, would find it obvious to similarly modify each of the protective case sections of Alexander to have retention tabs along at least one edge. Further, absent any stated criticality as to the specific dimensional range claimed, designing and sizing the tabs to extend one to two millimeters from the raised edge(s) of the protective case sections would be well within the level of the skilled artisan – i.e. not so small as to allow the protective case sections to become inadvertently detached, and not so large as to interfere with functionalities of the computer (e.g. keyboard operation, fully closing the computer, etc.).

Extensions of Time

Extensions of time under 37 CFR 1.136(a) will **not** be permitted in these proceedings because the provisions of 37 CFR 1.136 apply only to "an applicant" and

ACTION CLOSING PROSECUTION (37 CFR 1.949)	Control No. 95/001,767	Patent Under Reexamination BEKELE ET AL.
	Examiner DAVID O. REIP	Art Unit 3993

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address. --

Responsive to the communication(s) filed by:
Patent Owner on 18 January, 2012
Third Party(ies) on 17 February, 2012

Patent owner may once file a submission under 37 CFR 1.951(a) within 1 month(s) from the mailing date of this Office action. Where a submission is filed, third party requester may file responsive comments under 37 CFR 1.951(b) within 30-days (not extendable- 35 U.S.C. § 314(b)(2)) from the date of service of the initial submission on the requester. **Appeal cannot be taken from this action.** Appeal can only be taken from a Right of Appeal Notice under 37 CFR 1.953.

All correspondence relating to this inter partes reexamination proceeding should be directed to the **Central Reexamination Unit** at the mail, FAX, or hand-carry addresses given at the end of this Office action.

PART I. THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☐ Notice of References Cited by Examiner, PTO-892
2. ☒ Information Disclosure Citation, PTO/SB/08
3. ☐ _____

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6. ☐ Claims _____ are objected to.
7. ☐ The drawings filed on _____ ☐ are acceptable ☐ are not acceptable.
8 ☐ The drawing correction request filed on _____ is: ☐ approved. ☐ disapproved.
9 ☐ Acknowledgment is made of the claim for priority under 35 U.S.C. 119 (a)-(d). The certified copy has:
☐ been received. ☐ not been received. ☐ been filed in Application/Control No _____
10. ☐ Other _____

INTER PARTES REEXAMINATION

Background

On 9/16/11, the third party requester ("3PR") filed a compliant request for *inter partes* reexamination of U.S. Pat. No. 7,907,400 ("the '400 patent").

On 12/13/11, of the multiple grounds of rejection proposed by 3PR, it was determined that there was a reasonable likelihood that 3PR would prevail with respect to the proposed rejection of claims 1, 2, 4-7 and 26-39 as being obvious over Alexander in view of Genest under 35 USC 103(a). Correspondingly, a Decision on Request and a non-final Office action was mailed, adopting 3PR's proposed 103(a) rejections of claims 1, 2, 4-7 and 26-39 as being obvious over Alexander in view of Genest. Additionally, in said Office action, the examiner set forth rejections of claim 3 as being obvious over Alexander in view of Genest and further in view of Park, and claim 8 as being obvious over Alexander in view of Genest.

On 1/13/12, 3PR filed a 181 petition for review of examiner's decision to not reexamine certain claims of the '400 patent.

On 1/18/12, the patent owner ("PO") filed a response to the 12/13/2011 non-final Office action. PO response did not include any claim amendments.

On 2/17/12, 3PR filed Comments to PO's response.

On 3/23/12, 3PR's 181 petition was denied.

Previous Prosecution

In the request, 3PR proposed the following grounds of rejection:

Ground 1: Claims 1-53 are rejected under 35 U.S.C. 103(a) as being obvious over Alexander in view of Genest.

Ground 2: Claims 1-53 are rejected under 35 U.S.C. 103(a) as being obvious over Alexander in view of Chamberlain.

Ground 3: Claims 1-53 are rejected under 35 U.S.C. 103(a) as being obvious over Alexander in view of Speck See-Thru Sexy Hard Case publication.

Ground 4: Claims 1-53 are rejected under 35 U.S.C. 103(a) as being obvious over Speck See-Thru Sexy Hard Case publication in view of Alexander.

In the non-final Office action mailed 12/13/11, the examiner adopted 3PR's proposed 103(a) rejections of claims 1, 2, 4-7 and 26-39 as being obvious over Alexander in view of Genest. Additionally, the examiner set forth rejections of claim 3 as being obvious over Alexander in view of Genest and further in view of Park, and claim 8 as being obvious over Alexander in view of Genest. The standing rejections, as set forth in said non-final Office action, are included below for reference:

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Alexander in view of Genest

The third party requester ("3PR") proposed rejection of all of claims 1-53 under 35 USC 103(a) as being obvious over Alexander in view of Genest. In the Decision on Request, an RPL showing was made for claims 1, 2, 4-7 and 26-39. Accordingly, 3PR's proposed rejections of claims 1, 2, 4-7 and 26-39 as being obvious over Alexander in view of Genest are **adopted** for reasons set forth in the request for reexamination, on pages 19-21 and 27-28, which are hereby incorporated by reference.

Additionally, the following rejections are set forth by the examiner:

As to claim 3 -- Neither Alexander nor Genest teach colored, transparent plastic material. However, U.S. Pat. No. 6,405,881 to Park (hereinafter "Park") teaches a simple plastic container made from colored transparent plastic – see col. 2, lines 59-62 —"which would allow a person to easily see the contents through the outer walls of each container." Thus, it would have been obvious to one of ordinary skill in the art, in view of Alexander as modified by Genest, to make the protective cover of Alexander out of colored transparent plastic, as taught by Park, so that the computer company logo and/or identifying indicia (such as a serial number) can be seen through the cover without having to remove the cover.

As to claim 8 – Fig. 1 of Genest does not explicitly teach what is missing from Alexander, i.e. tabs that extend "from about one millimeter to about two millimeters from the raised edge" as recited in the claim. Genest is silent as to the dimension of tabs 44. However, apart from the tab dimensional language in claims 8, 15 and 20 of the '400 patent, there is no additional disclosure in the body of the specification as to the dimensional range of the tabs or any stated criticality to the dimensional range of the tabs. Therefore, one skilled in the art, in possession of the Genest teaching of tabs along at least one edge of a protective cover for aiding in the retention of the protective cover on an electronic device, would find it obvious to similarly modify each of the protective case sections of Alexander to have retention tabs along at least one edge. Further, absent any stated criticality as to the specific dimensional range claimed, designing and sizing the tabs to extend one to two millimeters from the raised edge(s) of the protective case sections would be well within the level of the skilled artisan – i.e. not so small as to allow the protective case sections to become inadvertently detached, and not so large as to interfere with functionalities of the computer (e.g. keyboard operation, fully closing the computer, etc.).

PO's Arguments, 3PR's Comments, and Examiner's decision

PO's arguments have been considered. PO argues that independent claims 1 and 39 are allowable over Alexander in view of Genest because the combination fails to disclose or suggest at least the claimed limitation of "the second elastic planar element being separate and independent from the first elastic planar element." Specifically, PO

argues that Alexander's case C is "a ***one-piece*** form fitting briefcase for a laptop computer that is assembled with nine different individual parts (i.e. an upper case, a lower case, two connector clasps, two connector pins, a handle compartment cover, and two hinges). Alexander discloses two connection methods, i.e. hinges and clips, to join the top and bottom sections of the laptop case. The case disclosed by Alexander is not a 'two-piece laptop computer cover,' as suggested by Third Party Requester" (Response at p. 16). PO also argues that the Genest hinged cover 14/16 does not cure the deficiency of Alexander. Further, PO argues that since the Genest tabs are stationary protrusions that the device is slid under, the tabs do not deform or move with the body of the case at any time to allow for the entry of the electronic device. PO thus argues that the Genest tabs do not read on the tabs as recited in the claims.

3PR's Comments have been considered. 3PR argues, *inter alia*, that the Alexander's case C, as shown in Fig. 3, is comprised of two separate and independent parts, with the first portion [case cover 202] covering the laptop's display (121) and the second portion [lower case body 200] covering the laptop's base (132). Further, 3PR argues that the pair of "hinged or pivoted connectors 204" connect the display portion of the ***laptop*** and the keyboard portion of the ***laptop***, and not the cover.

The examiner agrees with 3PR. Fig. 3 of Alexander clearly shows the case C as comprising two separate and independent portions, case cover 202 and lower case body 200. Further, the Genest tabs 44 are a relevant teaching for the "plurality of tabs" (ref. claim 1) and "a tab" (ref. claim 39) as recited in the '400 patent. Therefore, the

examiner **adopts** 3PR's Comments, pages 3-9, section (III)(A)(1) to (III)(A)(3), which is hereby incorporated by reference.

Notification of Concurrent Proceedings

The patent owner is reminded of the continuing responsibility under 37 CFR 1.985 to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving the '400 patent throughout the course of this reexamination proceeding. The third party requester is also reminded of the ability to similarly apprise the Office of any such activity or proceeding throughout the course of this reexamination proceeding. See MPEP § 2686 and 2686.04.

Service of Papers

Any paper filed by either the patent owner or the third party requester ***must be served*** on the other party in the reexamination proceeding in the manner provided by 37 CFR 1.248. See 37 CFR 1.903 and MPEP 2666.06.

This is an ACTION CLOSING PROSECUTION (ACP); see MPEP § 2671.02.

(1) Pursuant to 37 CFR 1.951(a), the patent owner may once file written comments limited to the issues raised in the reexamination proceeding and/or present a proposed amendment to the claims which amendment will be subject to the criteria of 37 CFR 1.116 as to whether it shall be entered and considered. Such comments and/or proposed amendments must be filed within a time period of 30 days or one month (whichever is longer) from the mailing date of this action. Where the patent owner files such comments and/or a proposed amendment, the third party requester may once file comments under 37 CFR 1.951(b) responding to the patent owner's submission within 30 days from the date of service of the patent owner's submission on the third party requester.

US007907400B2

(12) **United States Patent**
Bekele

(10) **Patent No.: US 7,907,400 B2**
(45) **Date of Patent: *Mar. 15, 2011**

(54) **PROTECTIVE COVER FOR LAPTOP COMPUTER**

(75) Inventor: **Haile Bekele**, Pensacola, FL (US)

(73) Assignee: **Tech Shell, Inc.**, Pensacola, FL (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **12/544,906**

(22) Filed: **Aug. 20, 2009**

(65) **Prior Publication Data**

US 2009/0310297 A1 Dec. 17, 2009

Related U.S. Application Data

(63) Continuation of application No. 11/788,329, filed on Apr. 19, 2007, now Pat. No. 7,643,274.

(60) Provisional application No. 60/745,323, filed on Apr. 21, 2006.

(51) **Int. Cl.**
G06F 1/16 (2006.01)

(52) **U.S. Cl.** **361/679.55**; 206/320

(58) **Field of Classification Search** 206/320; 361/679.55

See application file for complete search history.

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Dell laptop shell; Product currently on market; Photographs of differing views provided.

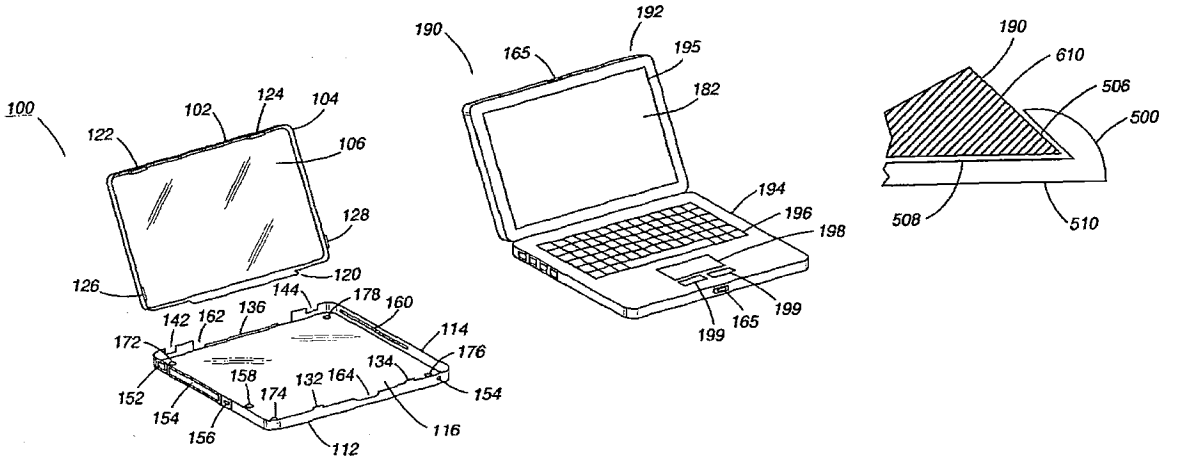
* cited by examiner

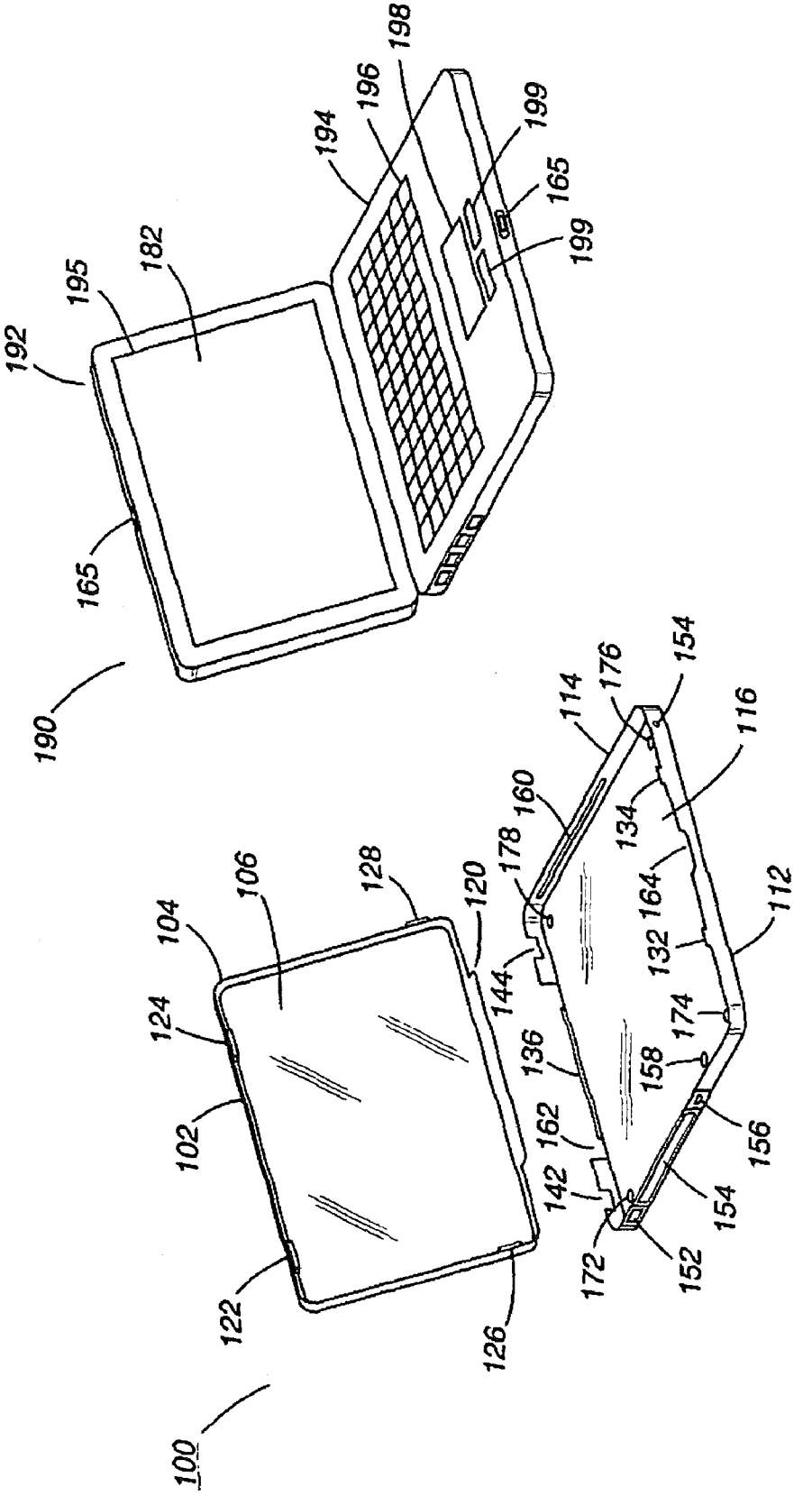
Primary Examiner — Lisa Lea-Edmonds
(74) *Attorney, Agent, or Firm* — Thomas, Kayden, Horstemeyer & Risley, LLP

(57) **ABSTRACT**

An exterior cover for a laptop computer having a display portion and a keyboard portion is disclosed. The exterior cover includes a first rigid planar element for placement on an outside surface of the display portion. The first rigid planar element includes a raised edge along a perimeter of the first rigid planar element, wherein the raised edge extends toward the display portion. The first rigid planar element further includes a plurality of tabs located on the raised edge, wherein each tab extends from the raised edge for gripping the display portion. The exterior cover further includes a second rigid planar element for placement on an outside surface of the keyboard portion. The second rigid planar element includes a raised edge extending toward the keyboard portion. The second rigid planar element further includes a plurality of tabs for gripping the keyboard portion.

53 Claims, 4 Drawing Sheets

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128
106
104
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154
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122
126
100

FIG. 1

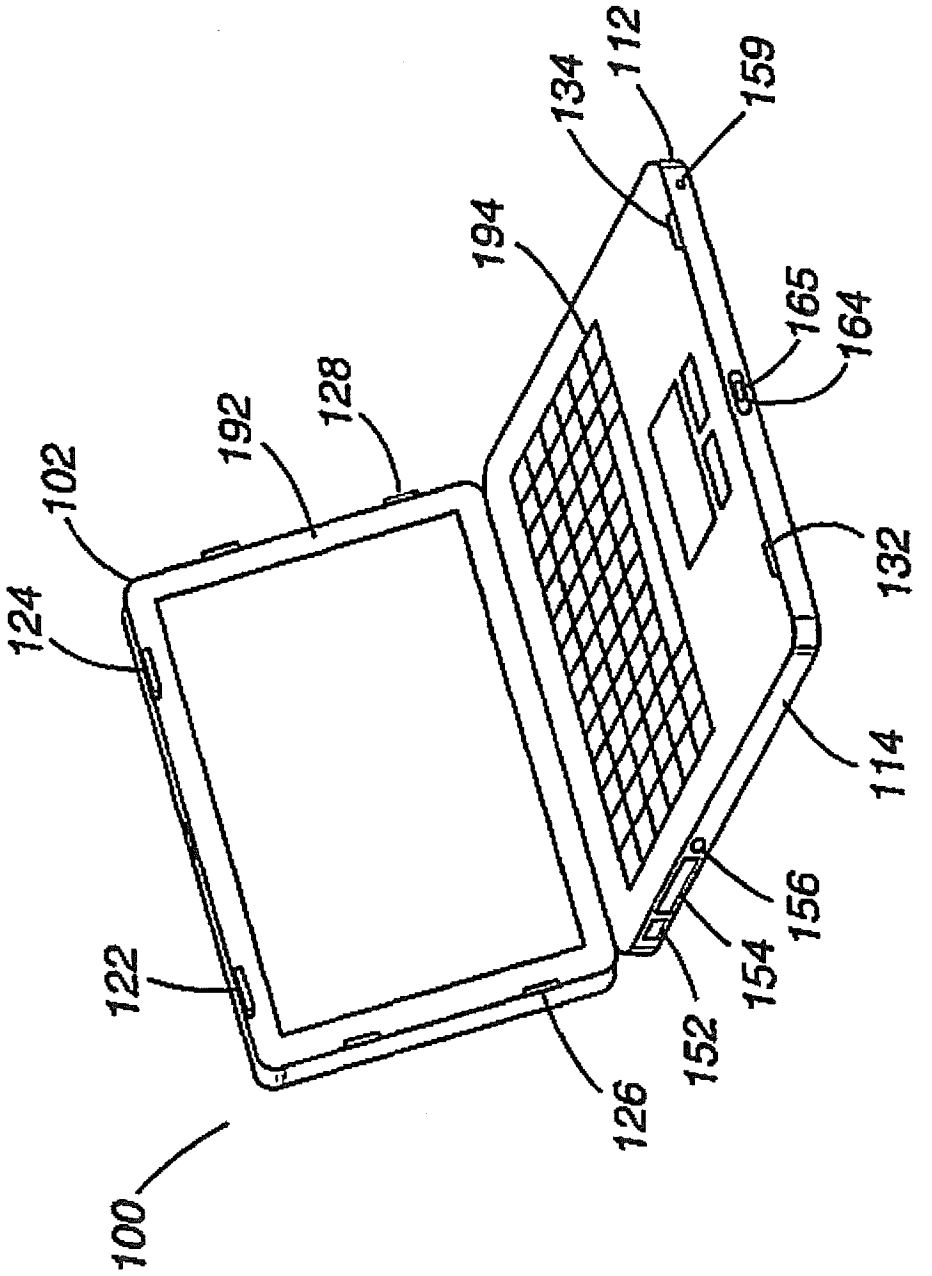
100
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FIG. 2

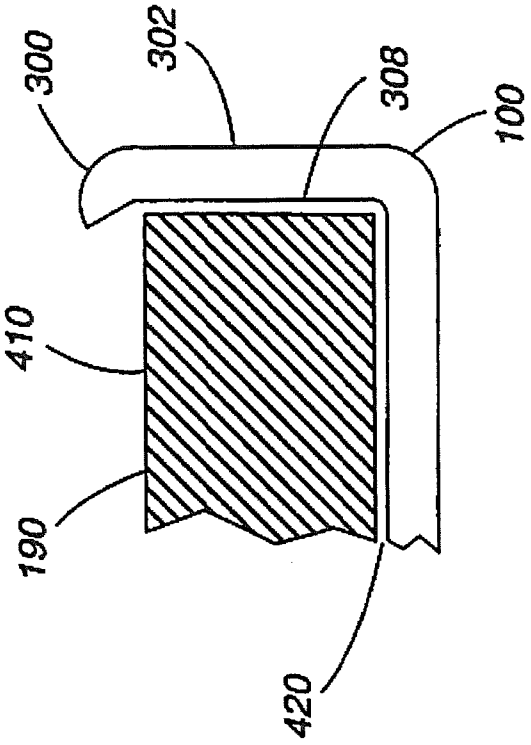

FIG. 4

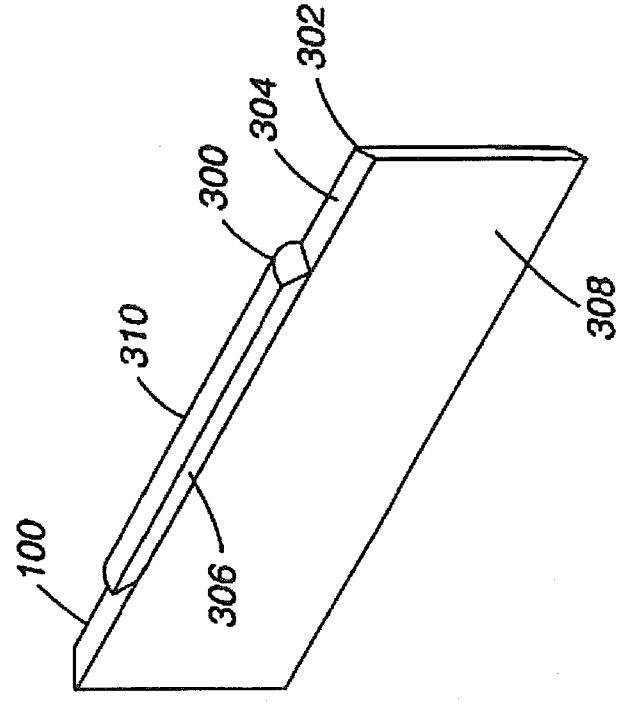

FIG. 3

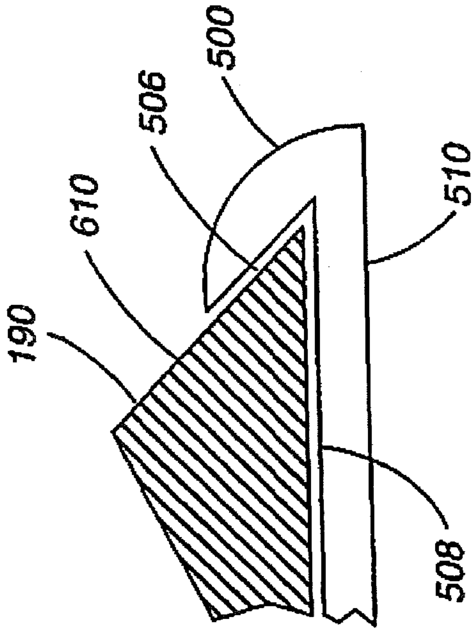

FIG. 6

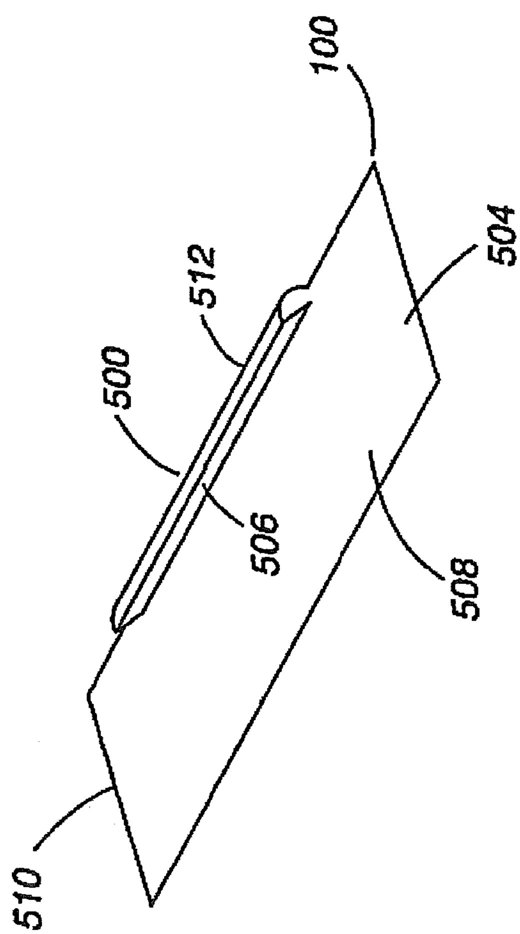

FIG. 5

PROTECTIVE COVER FOR LAPTOP COMPUTER

CROSS-REFERENCE TO RELATED APPLICATIONS

This utility patent application is a continuation of, and claims priority to, patent application Ser. No. 11/788,329, filed Apr. 19, 2007 now U.S. Pat. No. 7,643,274 and entitled "Protective Cover for Laptop Computer." Patent application Ser. No. 11/788,329 claims priority to provisional patent application Ser. No. 60/745,323 filed Apr. 21, 2006 and entitled "Protective Hard Plastic Case for Laptops." Provisional patent application Ser. No. 60/745,323 and patent application Ser. No. 11/788,329 are hereby incorporated by reference in their entirety.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not Applicable.

INCORPORATION BY REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC

Not Applicable.

FIELD OF THE INVENTION

This invention relates to accessories for personal computers, and more particularly to protective accessories for laptop personal computers.

BACKGROUND OF THE INVENTION

As computers become more ubiquitous and as individuals become more mobile, laptop computer sales are on the rise. Individuals are increasingly requiring computing capabilities and information on the go. As such, today it is customary to walk into a coffee shop or a library only to see large groups of individuals sitting at tables doing work, playing games, listening to music or reading on their laptops. Laptops can be more expensive than desktop computers due to the lighter materials, lower voltage parts and mobile components that comprise the laptop computer. For this reason, individuals are typically protective of their laptops, leading to the rise of the laptop accessory industry.

One problem that users often encounter with laptop computers is wear and tear on the exterior of the laptop. Since users often carry around their laptops and use them in cafes, restaurants, libraries, on the floor, in a car, on a subway or in any location not intended for computer use, it is inevitable that the exterior of the laptop will be scratched, dinged, dented, cracked, broken, stained, etc. Since most laptop exteriors are comprised of plastic, there is little one can do to fix such blemishes.

One approach to this problem has been to create laptop covers that comprise mostly a sleeve into which the laptop is inserted while it sin the closed position. This approach solves the problem of protecting the laptop while it is stored away, but does not solve the problem of protecting the laptop while it is in use. This approach, furthermore, requires that the user has to remove the laptop from the protective sleeve before every use, adding another step to the process of preparing the laptop for use, which can be a turnoff for users that are continually moving and lacking time.

Another problem that users often encounter with laptop computers is overheating of the bottom of the laptop. The power supply components of laptops are located on the bottom surface of the keyboard portion of the laptop. During long periods of use, the bottom of the laptop can overheat and burn or cause discomfort to the user if the laptop is sitting on his or her lap. Further, a user's genitalia are near the lap region of an individual and there are health hazards associated with overheating of the scrotum or the vagina. When testicles are exposed to exorbitant heat over long periods of time, for example, an individual's fertility can be affected. Additionally, if a laptop is resting on top of a piece of furniture, such as a table or a desk, an overheating laptop can cause damage to the surface of the furniture.

Therefore, a need exists to overcome the problems with the prior art as discussed above, and particularly for a more efficient way to protect the exterior of laptop computers and to manage the heat generated by the laptop computer during use.

SUMMARY OF THE INVENTION

Briefly, in accordance with one embodiment of the present invention, an exterior cover for a laptop computer having a display portion and a keyboard portion is disclosed. The exterior cover includes a first rigid planar element for placement on an outside surface of the display portion. The first rigid planar element includes a raised edge along a perimeter of the first rigid planar element, wherein the raised edge extends toward the display portion. The first rigid planar element further includes a plurality of tabs located on the raised edge, wherein each tab extends from the raised edge for gripping the display portion. The exterior cover further includes a second rigid planar element for placement on an outside surface of the keyboard portion. The second rigid planar element includes a raised edge along a perimeter of the second rigid planar element, wherein the raised edge extends toward the keyboard portion. The second rigid planar element further includes a plurality of tabs located on the raised edge, wherein each tab extends from the raised edge for gripping the keyboard portion.

In another embodiment of the present invention, an exterior cover for a laptop computer having a display portion and a keyboard portion is disclosed. The exterior cover includes a first rigid planar element having a rectangular shape for covering a top surface of the display portion. The first rigid planar element includes a raised edge for covering a section of all sides of the display portion. The first rigid planar element further includes a plurality of tabs located on the raised edge, wherein each tab extends from the raised edge for gripping the display portion. The exterior cover further includes a second rigid planar element having a rectangular shape for covering a bottom surface of the keyboard portion. The second rigid planar element includes a raised edge for covering a section of all sides of the keyboard portion. The second rigid planar element further includes a plurality of tabs located on the raised edge, wherein each tab extends from the raised edge for gripping the keyboard portion.

In another embodiment of the present invention, a protective cover for a laptop computer is disclosed. The protective cover includes a first rectangular sheet comprised of a rigid material for fastening to an outside surface of a display portion of the laptop computer. The first rectangular sheet includes a plurality of protruding tabs located on opposing sides of the first rectangular sheet, wherein the plurality of tabs extend toward the display portion for gripping the display portion. The protective cover further includes a second rectangular sheet comprised of a rigid material for fastening

to an outside surface of a keyboard portion of the laptop computer. The second rectangular sheet includes a plurality of protruding tabs located on opposing sides of the second rectangular sheet, wherein the plurality of tabs extend toward the keyboard portion for gripping the keyboard portion.

The foregoing and other features and advantages of the present invention will be apparent from the following more particular description of the preferred embodiments of the invention, as illustrated in the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

The subject matter, which is regarded as the invention, is particularly pointed out and distinctly claimed in the claims at the conclusion of the specification. The foregoing and other features and also the advantages of the invention will be apparent from the following detailed description taken in conjunction with the accompanying drawings. Additionally, the left-most digit of a reference number identifies the drawing in which the reference number first appears.

FIG. **1** is an illustration of a perspective view of the elements comprising the exterior cover for a laptop computer, in accordance with one embodiment of the present invention.

FIG. **2** is an illustration of a perspective view of the exterior cover of FIG. **1**, after application to a laptop computer.

FIG. **3** is a perspective detail view of a first tab for securing a rigid planar sheet of the exterior cover to a laptop computer, in accordance with one embodiment of the present invention.

FIG. **4** is a cross-sectional detail view of the first tab for securing a rigid planar sheet of the exterior cover to a laptop computer, in accordance with one embodiment of the present invention.

FIG. **5** is a perspective detail view of a second tab for securing a rigid planar sheet of the exterior cover to a laptop computer, in accordance with one embodiment of the present invention.

FIG. **6** is a cross-sectional detail view of the second tab for securing a rigid planar sheet of the exterior cover to a laptop computer, in accordance with one embodiment of the present invention.

DETAILED DESCRIPTION

It should be understood that these embodiments are only examples of the many advantageous uses of the innovative teachings herein. In general, statements made in the specification of the present application do not necessarily limit any of the various claimed inventions. Moreover, some statements may apply to some inventive features but not to others. In general, unless otherwise indicated, singular elements may be in the plural and vice versa with no loss of generality. In the drawing like numerals refer to like parts through several views.

The present invention, according to a preferred embodiment, overcomes problems with the prior art by providing a rigid exterior cover for laptop computers, wherein the exterior cover comprises one separate piece for applying to the outside surface of the display portion of the laptop computer and a second separate piece for applying to the outside surface of the keyboard portion of the laptop computer. The present invention further solves problems with the prior art by providing an exterior cover that simply snaps onto the laptop computer using a plurality of tabs that are pushed into place around the laptop by applying manual pressure, thereby allowing for easy and fast application and removal. Further, the present invention solves problems with the prior art by providing an exterior laptop cover that dissipates the heat created by the bottom of the laptop computer during use, thereby eliminating or reducing the negative effects of an over-heated laptop computer on individuals and furniture.

FIG. **1** is an illustration of a perspective view of the elements comprising the exterior cover **100** for a laptop computer **190**, in accordance with one embodiment of the present invention. FIG. **1** shows a laptop computer **190** having a display portion **192**, which includes a liquid crystal display **195** or other form of computer display, and a keyboard portion **194**, which includes a keyboard **196**, a touch pad **198**, and buttons **199**. The display portion **192** comprises an inside surface **182** and an outside surface (not shown) located on the opposite as the inside surface **182**. Likewise, the keyboard portion **194** includes an inside surface **184** and an outside surface (not shown) located on the opposite as the inside surface **184**.

FIG. **1** further shows a separate, or independent, rigid planar sheet **102** for applying to the outside surface of the display portion **192** of the laptop computer **190**. The rigid planar sheet **102** may be substantially rectangular with rounded corners. The rigid planar sheet **102** may further include a raised edge **104** disposed around the circumference or perimeter of the rigid planar sheet **102**, wherein the raised edge **104** extends perpendicularly from the rigid planar sheet **102** and extends toward the inside surface **106** of the rigid planar sheet **102**.

Rigid planar sheet **102** may further include a plurality of tabs **122**, **124**, **126**, **128** located along the raised edge **104** of the rigid planar sheet **102**. Each of the plurality of tabs **122**, **124**, **126**, **128** may extend higher than the raised edge **104**. Additionally, each of the plurality of tabs **122**, **124**, **126**, **128** may include a protruding element that extends perpendicularly from the raised edge **104** towards the inside surface **106** of the rigid planar sheet **102**. More detail on the protruding element of each tab is provided below with reference to FIGS. **3-6**. The use of tabs allows for the rigid planar sheet **102** to snap onto the display portion **192** of the laptop computer **190** by applying manual pressure, thereby allowing for easy and fast application and removal of the rigid planar sheet **102**.

Note that two tabs **122**, **124** are located along a top of the rigid planar sheet **102**, while one tab **126** is located on a left side of the rigid planar sheet **102** and one tab **128** is located on a right side of the rigid planar sheet **102**. Also note that tabs **126** and **128** are located on opposite ends of the rigid planar sheet **102** so as to provide pressure in opposite directions towards the center of the display portion **192** when applied. This pressure secures the rigid planar sheet **102** into the display portion **192**.

The raised edge **104** disposed around the circumference or perimeter of the rigid planar sheet **102** covers at least a portion of the sides of the display portion **192** when applied. FIG. **1** further shows a super raised edge **120** located along the bottom of the rigid planar sheet **102**, wherein the super raised edge **120** is raised higher than the raised edge **104**.

FIG. **1** further shows a separate, or independent, rigid planar sheet **112** for applying to the outside surface of the keyboard portion **194** of the laptop computer **190**. The rigid planar sheet **112** may be substantially rectangular with rounded corners. The rigid planar sheet **112** may further include a raised edge **114** disposed around at least a portion of the circumference or perimeter of the rigid planar sheet **112**, wherein the raised edge **114** extends perpendicularly from the rigid planar sheet **112** and extends toward the inside surface **116** of the rigid planar sheet **112**.

Rigid planar sheet **112** may further include a plurality of tabs **132**, **134**, **136** located along the raised edge **114** of the rigid planar sheet **112**. Each of the plurality of tabs **132**, **134**, **136** may extend higher than the raised edge **114**. Additionally,

each of the plurality of tabs **132**, **134**, **136** may include a protruding element that extends perpendicularly from the raised edge **114** towards the inside surface **116** of the rigid planar sheet **112**. More detail on the protruding element of each tab is provided below with reference to FIGS. **3-6**. The use of tabs allows for the rigid planar sheet **112** to snap onto the keyboard portion **194** of the laptop computer **190** by applying manual pressure, thereby allowing for easy and fast application and removal of the rigid planar sheet **112**.

Note that two tabs **132**, **134** are located along a bottom of the rigid planar sheet **112**, while one tab **136** is located on a top side of the rigid planar sheet **112**. Also note that tabs **132**, **134** are located on opposite ends of the rigid planar sheet **112** as tab **136** so as to provide pressure in opposite directions towards the center of the keyboard portion **194** when applied. This pressure secures the rigid planar sheet **112** into the keyboard portion **194**.

The raised edge **114** of rigid planar sheet **112** includes lower or retracted portions **142**, **144** located along a top of the rigid planar sheet **112**. These retracted portions **142**, **144** are not raised as high as the raised edge **114** and either provide an open area for a movable part, such as a hinge connecting the keyboard portion **194** with display portion **192**, or provide access to a portion of the keyboard portion **194**, such as a power connection, a light, a data port, a button or a removable media drive.

The raised edge **114** of rigid planar sheet **112** further includes shaped orifices **152**, **154**, **156** located along a left side of the rigid planar sheet **112**. These shaped orifices **152**, **154**, **156** provide access to a portion of the keyboard portion **194**, such as a power connection, a light, a data port, a button or a removable media drive. Also note shaped orifice **158** (for air circulation) located along the rigid planar sheet **112**, shaped orifice **159** located along a bottom side of the raised edge **114** and shaped orifice **160** located along a right side of the raised edge **114**. These shaped orifices **152**, **154**, **156**, **158**, **159**, **160** provide access to a portion of the keyboard portion **194**, such as a power connection, a light, a data port, a button or a removable media drive. For example, orifice **160** may provide access to a CD/DVD drive while orifice **159** may provide access to an LED light. Note that each orifice is shaped according to the shape of the item to which it is providing access.

The raised edge **114** disposed around the circumference or perimeter of the rigid planar sheet **112** covers at least a portion of the sides of the keyboard portion **194** when applied. FIG. **1** further shows an area **162** located along the top of the rigid planar sheet **112** wherein the raised edge **114** is either lower or non-existent. Area **162** may provide an open area for a movable part, such as a hinge connecting the keyboard portion **194** with display portion **192**. Also note lower edge **164**, which is lower than raised edge **114**. Lower edge **164** may provide access to a mechanism **165**, such as a latch, for opening or closing the laptop computer **190**.

Lastly, note depressions **172**, **174**, **176**, **178** located on the rigid planar sheet **112**. The depressions **172**, **174**, **176**, **178** are located near the corners of the rectangular rigid planar sheet **112**. Each depression **172**, **174**, **176**, **178** causes a protrusion on the opposite side (not shown) of the rigid planar sheet **112**. A "foot" or elastic, pill-shaped element (comprised of rubber or plastic) may be adhered to the protrusion on the opposite side (not shown) of the rigid planar sheet **112**, so as to protect furniture or any surface from scratching or damage when the rigid planar sheet **112** is placed on it.

Rigid planar sheets **102** and **112** may be manufactured from a variety of materials including metal, such as stainless steel, titanium, aluminum or any metal alloy, rigid fabric, carbon fiber, epoxy resin, graphite, rubber, plastic or any combination of the above.

Plastic covers a range of synthetic or semi-synthetic polymerization products. Plastics are composed of organic condensation or addition polymers and may contain other substances to improve performance or economics. In the present invention, plastic may comprise any one of the following forms of plastic: polyethylene, polystyrene, high impact polystyrene, polyethylene terephthalate, nylon, polypropylene, acrylonitrile butadiene styrene (ABS), bayblend and polyvinylidene chloride (PVC).

The rigid planar sheets **102** and **112** may be manufactured of the present invention can be manufactured from a plastic compound using any variety of processes, such as injection molding, fusible core injection molding and thermoforming.

Injection molding is a manufacturing technique for making parts from thermoplastic material in production. Molten plastic is injected at high pressure into a mold, which is the inverse of the product's shape. After a product is designed by an industrial designer, molds are made by a mold-maker from metal, usually either steel or aluminum, and precision-machined to form the features of the desired part. Injection molding is widely used for manufacturing a variety of parts and is the most common method of plastic production.

The most commonly used thermoplastic materials are polystyrene, ABS or acrylonitrile butadiene styrene, nylon, polypropylene, polyethylene, and polyvinyl chloride or PVC.

Injection molding machines, also known as presses, hold the molds in which the components are shaped. Presses are rated by tonnage, which expresses the amount of clamping force that the machine can generate. This pressure keeps the mould closed during the injection process.

Molds separate into at least two halves (called the core and the cavity) to permit the plastic part to be extracted. In general, the shape of a part must not cause it to be locked into the mould. For example, sides of objects typically cannot be parallel with the direction of draw (the direction in which the core and cavity separate from each other). They are angled slightly. Pins are the most popular method of removal from the core, but air ejection, and stripper plates can also be used depending on the application. Most ejection plates are found on the moving half of the tool, but they can be placed on the fixed half.

Molds are built through two main methods: standard machining and EDM machining. Standard machining, in its conventional form, has historically been the method of building injection molds. With technological development, computer numerical control (CNC) machining became the predominant means of making more complex molds with more accurate mold details in less time than traditional methods.

The electrical discharge machining (EDM) or spark erosion process has become widely used in mold making. EDM is a simple process in which a shaped electrode, usually made of copper or graphite, is very slowly lowered onto the mould surface (over a period of many hours), which is immersed in paraffin oil. A voltage applied between tool and mould causes erosion of the mould surface in the inverse shape of the electrode.

Fusible core injection molding or lost core injection molding is a specialized plastic injection molding process. It is used in the manufacture of molded components with cavities or undercuts, which would not be possible with tools having demoldable cores. The process consists of three essential steps. First, a core consisting of a low melting point metal is poured in the shape of the cavity specified for the molded component. This is inserted into the injection mold in the

second step and injected with plastic. Molded component and core are both demolded and, in the third step, immersed in a heated bath to melt out the core. The bath temperature is selected to be somewhat higher than that of the core alloy's melting point, but not so that the injected part would be damaged. Induction heating of the core metal in the heated bath reduces the melt out time to a few minutes. Liquid core metal collects on the bottom of the heated bath and is usable for a new core.

Thermoforming is a manufacturing process for thermoplastic sheet or film. The sheet or film is heated between infrared, natural gas, or other heaters to its forming temperature. Then it is stretched over or into a temperature-controlled, single-surface mold. Cast or machined aluminum is the most common mold material, although epoxy and wood tooling are sometime used for low volume production. The sheet is held against the mold surface unit until cooled. The formed part is then trimmed from the sheet. The trimmed material is usually reground, mixed with virgin plastic, and reprocessed into a usable sheet. There are several categories of thermoforming, including vacuum forming, pressure forming, twin-sheet forming, drape forming, free blowing, and simple sheet bending.

In one embodiment of the present invention, rigid planar sheets **102** and **112** may be manufactured from a material that is a solid color (or multiple solid colors), a transparent color (or multiple transparent colors) or may include a pattern or other series of multiple colors in a variety of selections. In another embodiment of the present invention, rigid planar sheets **102** and **112** may include graphics, designs, logos, pictures, or any images that can be applied to the planar sheets. The graphics may be embedded in the material comprising the rigid planar sheets **102** and **112** or the graphics may be stamped, painted, stenciled, laser etched, printed, engraved or silk-screened onto the exterior or interior surfaces of the planar sheets.

In one embodiment of the present invention, rigid planar sheets **102** and **112** may be manufactured from a material that dissipates or insulates the heat created by the laptop **190** during use. The material used to manufacture the rigid planar sheets **102** and **112**, such as plastic, may possess heat isolative properties that prevent the outside surface of the exterior cover **100** from overheating. Alternatively, the material used to manufacture the rigid planar sheets **102** and **112**, such as metal, may possess heat conductive properties that quickly dissipate the heat originating from the laptop **190**. Alternatively, the material used to manufacture the rigid planar sheets **102** and **112** may possess any combination of heat insulating and heat conducting properties so as to accomplish the goal of re-directing the heat emanating from the use of the laptop **190** so as not to be directed downwards towards the bottom of the laptop. Such redirection of the laptop heat is beneficial as it reduces or eliminates the negative implications of high temperatures along the bottom of a laptop, including overheating or burning of a person's lap when the laptop is sitting on top of a user's lap and overheating of a table, desk or other furniture, thereby leading to damaged furniture.

Furthermore, shaped orifices **152**, **154**, **156**, **158**, **159**, **160** may provide access to a space **420** (see FIG. **4**) between the rigid planar sheet **112** and the keyboard portion **194**. This space **420** may provide an area for heat convection wherein air is the medium. As the bottom of the keyboard portion **194** is heated, the air in the space **420** is heated while cooler air enters the space **420** via orifice **158** (among others). As relatively hot air rises, so does the heated air move towards the top of the keyboard portion **194** to escape as cooler air rushes upwards into space **420** to fill the void. In this way, the temperature of the bottom of the keyboard portion **194** is regulated by heat convection so as not to overheat.

FIG. **2** is an illustration of a perspective view of the exterior cover **100** of FIG. **1**, after application to the laptop computer **190**. Note that rigid planar sheet **102** has been applied to the display portion **192** and rigid planar sheet **112** has been applied to the keyboard portion **194**. Note also that the rigid planar sheets **102** and **112** can be applied to the laptop **190** while the laptop is either in the open or closed position. The plurality of tabs **122**, **124**, **126**, **128** of the rigid planar sheet **102**, each having a protruding element, allow for the rigid planar sheet **102** to snap onto the display portion **192** of the laptop computer **190** by applying manual pressure, thereby allowing for easy and fast application and removal of the rigid planar sheet **102**. Tabs **126** and **128** are located on opposite ends of the rigid planar sheet **102** so as to provide pressure in opposite directions towards the center of the display portion **192** when applied. This pressure secures the rigid planar sheet **102** into the display portion **192**.

The plurality of tabs **132**, **134** and **136** (not shown) of the rigid planar sheet **112**, each having a protruding element, allow for the rigid planar sheet **112** to snap onto the keyboard portion **194** of the laptop computer **190** by applying manual pressure, thereby allowing for easy and fast application and removal of the rigid planar sheet **112**. Tabs **132**, **134** are located on opposite ends of the rigid planar sheet **102** as tab **136**, so as to provide pressure in opposite directions towards the center of the keyboard portion **194** when applied. This pressure secures the rigid planar sheet **112** into the keyboard portion **194**.

The rigid planar sheet **112** includes shaped orifices **152**, **154**, **156** located along a left side of the rigid planar sheet **112**, the orifices providing access to a portion of the keyboard portion **194**, such as a power connection, a light, a data port, a button or a removable media drive. Also note shaped orifice **159** located along a bottom side of the raised edge **114**. These shaped orifices **152**, **154**, **156**, **159** provide access to a portion of the keyboard portion **194**, such as a power connection, a light, a data port, a button or a removable media drive. Note that each orifice is shaped according to the shape of the item to which it is providing access. Also note lower edge **164**, which may provide access to a mechanism **165**, such as a latch, for opening or closing the laptop computer **190**.

FIG. **3** is a perspective detail view of a first tab **300** for securing a rigid planar sheet of the exterior cover **100** to a laptop computer **190**, in accordance with one embodiment of the present invention. The first tab **300** may describe tabs **122**, **124**, **126**, **128** **132**, **134** of FIG. **1** in more detail. FIG. **3** shows that first tab **300** is attached to a top surface **304** of raised edge **302**, analogous to raised edge **104** or **114**. The first tab **300** includes a flat surface **306** that slopes inward or extends toward the inside surface **308** of the edge **302**. The flat surface **306** connects to the top surface **304** of raised edge **302**. The first tab **300** has a rounded back **310** that curves back away from the surface **306** and connects to the raised edge **302**.

FIG. **4** is a cross-sectional detail view of the first tab **300** for securing a rigid planar sheet of the exterior cover **100** to a laptop computer **190**, in accordance with one embodiment of the present invention. FIG. **4** shows that flat surface **306** of tab **300** slopes inward or extends toward the inside surface **308** of the raised edge **302**. As the laptop **190** is inserted into the exterior cover **100**, the tab **300** may be pushed back or away from the inside surface **308** of the edge **302** so as to allow for the full width of the laptop **190** to be inserted into the exterior cover **100**. The malleable or elastic nature of the material comprising the exterior cover **100**, such as plastic, allows for the tab **300** to be pushed back or away from the inside surface

308 of the edge 302 without breaking the tab 300, while allowing for the tab 300 to return to its initial shape or arrangement after the full width of the laptop 190 is inserted into the exterior cover 100.

FIG. 4 shows that after insertion of the laptop 190 into the exterior cover 100, the flat surface 306 of tab 300 slopes inward toward the laptop, thereby extending over the top surface 410 of the laptop 190 so as to grip the laptop 190. This positioning keeps the laptop 190 from moving upwards and exiting the exterior cover 100 since the tab 300 grips the laptop 190 to secure it in place. Thus, tab 300 secures the laptop 190 within the exterior cover 100. The application of enough force, however, may force the tab 300 to be pushed back or away from the inside surface 308 of the edge 302 so as to allow for the full width of the laptop 190 to exit the exterior cover 100.

FIG. 5 is a perspective detail view of a second tab 500 for securing a rigid planar sheet of the exterior cover 100 to a laptop computer 190, in accordance with one embodiment of the present invention. The second tab 500 may describe tab 136 of FIG. 1 in more detail. FIG. 5 shows that second tab 500 is attached to a top surface 504 of a rigid planar sheet 510, and possible a raised edge (not shown), analogous to raised edge 104 or 114. The second tab 500 includes a flat surface 506 that slopes inward or extends toward the inside surface 508 of the rigid planar sheet 510. The flat surface 506 connects to the top surface 504 of the rigid planar sheet 510 or a raised edge. The second tab 500 has a rounded back 512 that curves back away from the surface 506 and connects to the top surface 504 of the rigid planar sheet 510 or a raised edge.

FIG. 6 is a cross-sectional detail view of the second tab 500 for securing a rigid planar sheet of the exterior cover 100 to a laptop computer 190, in accordance with one embodiment of the present invention. FIG. 6 shows that flat surface 506 of second tab 500 slopes inward or extends toward the inside surface 508 of the rigid planar sheet 510. As the laptop 190 is inserted into the exterior cover 100, the second tab 500 may be pushed back or away from the inside surface 508 of the rigid planar sheet 510 so as to allow for the full width of the laptop 190 to be inserted into the exterior cover 100. The malleable or elastic nature of the material comprising the exterior cover 100, such as plastic, allows for the second tab 500 to be pushed back or away from the inside surface 508 of the rigid planar sheet 510 without breaking the second tab 500, while allowing for the second tab 500 to return to its initial shape or arrangement after the full width of the laptop 190 is inserted into the exterior cover 100.

FIG. 6 shows that after insertion of the pointed protrusion of laptop 190 into the exterior cover 100, the flat surface 506 of second tab 500 slopes inward toward the laptop, thereby extending over the top surface 610 of a pointed protrusion of the laptop 190 so as to grip the laptop 190. This positioning keeps the laptop 190 from moving upwards and exiting the exterior cover 100 since the second tab 500 grips the laptop 190 to secure it in place. Thus, second tab 500 secures the laptop 190 within the exterior cover 100. The application of enough force, however, may force the second tab 500 to be pushed back or away from the inside surface 508 of the rigid planar sheet 510 so as to allow for the full width of the laptop 190 to exit the exterior cover 100.

Although specific embodiments of the invention have been disclosed, those having ordinary skill in the art will understand that changes can be made to the specific embodiments without departing from the spirit and scope of the invention. The scope of the invention is not to be restricted, therefore, to the specific embodiments. Furthermore, it is intended that the appended claims cover any and all such applications, modifications, and embodiments within the scope of the present invention.

I claim:

1. An exterior cover for a laptop computer having a display portion and a keyboard portion, comprising:
- a first elastic planar element for placement on an outside surface of the display portion, the first elastic planar element including:
  - a raised edge along a portion of a perimeter of the first elastic planar element, wherein the raised edge extends perpendicularly from the first elastic planar element and toward the display portion; and
  - a plurality of tabs located on the raised edge, wherein each tab extends from the raised edge over an inside surface of the display portion so as to grip the display portion; and
- a second elastic planar element for placement on an outside surface of the keyboard portion, the second elastic planar element being separate and independent from the first elastic planar element, the second elastic planar element including:
  - a raised edge along a portion of a perimeter of the second elastic planar element, wherein the raised edge extends perpendicularly from the second elastic planar element and toward the keyboard portion; and
  - a plurality of tabs located on the raised edge, wherein each tab extends from the raised edge over an inside surface of the keyboard portion so as to grip the keyboard portion.

2. The exterior cover of claim 1, wherein the exterior cover is comprised of an elastic plastic material.

3. The exterior cover of claim 2, wherein the exterior cover is comprised of a colored, transparent plastic material.

4. The exterior cover of claim 1, wherein the first and second elastic planar elements comprise a substantially rectangular shape.

5. The exterior cover of claim 4, wherein the plurality of tabs of the first elastic planar element comprise four tabs.

6. The exterior cover of claim 5, wherein the plurality of tabs of the second elastic planar element comprise three tabs.

7. The exterior cover of claim 6, wherein the raised edge of the second elastic planar element includes at least one orifice for allowing access to a removable media port in the keyboard portion.

8. The exterior cover of claim 7, wherein each of the plurality of tabs of the first and second elastic planar elements extend from about one millimeter to about two millimeters from the raised edge.

9. An exterior cover for a laptop computer having a display portion and a keyboard portion, comprising:
- a first elastic planar element having a rectangular shape for covering a top surface of the display portion, the first elastic planar element including:
  - a raised edge extending perpendicularly from the first elastic planar element, the raised edge covering a section of all sides of the display portion; and
  - a plurality of tabs located on the raised edge, wherein each tab extends from the raised edge so as to extend over a bottom surface of the display portion, thereby gripping the display portion; and
- a second elastic planar element having a rectangular shape for covering a bottom surface of the keyboard portion, the second elastic planar element being separate and independent from the first elastic planar element, the second elastic planar element including:

a raised edge extending perpendicularly from the second elastic planar element, the raised edge covering a section of all sides of the keyboard portion;

at least one tab extending from the second elastic planar element for gripping the keyboard portion; and

a plurality of tabs located on the raised edge, wherein each tab extends from the raised edge so as to extend over a top surface of the keyboard portion, thereby gripping the keyboard portion.

10. The exterior cover of claim **9**, wherein the exterior cover is comprised of an elastic plastic material.

11. The exterior cover of claim **9**, wherein the each of the plurality of tabs of the first and second elastic planar elements are raised higher than the raised edge of the first and second elastic planar elements, respectively.

12. The exterior cover of claim **11**, wherein the plurality of tabs of the first elastic planar element comprise four tabs.

13. The exterior cover of claim **12**, wherein the plurality of tabs of the second elastic planar element comprise three tabs.

14. The exterior cover of claim **13**, wherein the raised edge of the second elastic planar element includes at least one orifice for allowing access to a removable media port in the keyboard portion.

15. The exterior cover of claim **14**, wherein each of the plurality of tabs of the first and second elastic planar elements extend from about one millimeter to about two millimeters from the raised edge.

16. A protective cover for a laptop computer, comprising:

a first rectangular sheet comprised of an elastic material for fastening to an outside surface of a display portion of the laptop computer, the first rectangular sheet including a plurality of protruding tabs located on opposing sides of the first rectangular sheet, wherein the plurality of tabs extend over an inside surface of the display portion, thereby gripping the display portion; and

a second rectangular sheet comprised of an elastic material for fastening to an outside surface of a keyboard portion of the laptop computer, the second rectangular sheet being separate and independent from the first rectangular sheet, the second rectangular sheet including a plurality of protruding tabs located on opposing sides of the second rectangular sheet, wherein the plurality of tabs extend over an inside surface of the keyboard portion, thereby gripping the keyboard portion.

17. The protective cover of claim **16**, wherein the protective cover is comprised of a heat-dissipating, plastic material.

18. The protective cover of claim **16**, wherein the protective cover is comprised of an elastic plastic material.

19. The protective cover of claim **16**, wherein the protective cover is comprised of an elastic translucent plastic material.

20. The protective cover of claim **16**, wherein each of the plurality of protruding tabs of the first and second rectangular sheets extend from about one millimeter to about two millimeters in length.

21. An exterior cover for a laptop computer having a display portion and a keyboard portion, comprising:

a first elastic planar element having a rectangular shape with rounded corners, the first elastic planar element for placement on an outside surface of the display portion, the first elastic planar element including:

a raised edge located on all four sides of the first elastic planar element, wherein the raised edge extends perpendicularly from the first elastic planar element toward the display portion; and

two or more tabs located on opposing sides of the raised edge, wherein each tab extends from the raised edge, thereby extending over an inside surface of the display portion and gripping the display portion; and

a second elastic planar element having a rectangular shape with rounded corners, the second elastic planar element for placement on an outside surface of the keyboard portion, the second elastic planar element being separate and independent from the first elastic planar element, the second elastic planar element including:

a raised edge located on all four sides of the second elastic planar element, wherein the raised edge extends perpendicularly from the second elastic planar element toward the keyboard portion; and

two or more tabs located on the raised edge, wherein each tab extends from the raised edge, thereby extending over an inside surface of the keyboard portion and gripping the keyboard portion.

22. The exterior cover of claim **21**, further comprising a plurality of rounded protrusions on an exterior surface of the second elastic planar element.

23. The exterior cover of claim **21**, further comprising a single tab extending at an acute angle from the second elastic planar element towards the keyboard portion.

24. The exterior cover of claim **21**, further comprising a plurality of orifices in the second elastic planar element for allowing circulation of air.

25. The exterior cover of claim **21**, further comprising a cutout in the raised edge of the second elastic planar for allowing access to a latch of the laptop.

26. The exterior cover of claim **1**, wherein the junction of the raised edge and the first planar element is a rounded corner.

27. The exterior cover of claim **1**, wherein the junction of the raised edge and the second planar element is a rounded corner.

28. The exterior cover of claim **1**, wherein the plurality of tabs on the raised edge of the first planar element extend perpendicularly from the raised edge.

29. The exterior cover of claim **28**, wherein the plurality of tabs extend over an inside surface of the display portion.

30. The exterior cover of claim **29**, wherein the plurality of tabs grip the inside surface of the display portion.

31. The exterior cover of claim **1**, wherein the plurality of tabs on the raised edge of the second planar element extend perpendicularly from the raised edge.

32. The exterior cover of claim **31**, wherein the plurality of tabs extend over an inside surface of the keyboard portion.

33. The exterior cover of claim **32**, wherein the plurality of tabs grip the inside surface of the keyboard portion.

34. The exterior cover of claim **1**, wherein the plurality of tabs on the raised edge of the first planar element extend from the raised edge at an angle of less than ninety degrees.

35. The exterior cover of claim **1**, wherein the plurality of tabs on the raised edge of the second planar element extend from the raised edge at an angle of less than ninety degrees.

36. The exterior cover of claim **1**, wherein the plurality of tabs on the raised edge of the first planar element extend from the raised edge at an angle of more than ninety degrees.

37. The exterior cover of claim **1**, wherein the plurality of tabs on the raised edge of the second planar element extend from the raised edge at an angle of more than ninety degrees.

38. The exterior cover of claim **1**, wherein the keyboard portion comprises a QWERTY keyboard.

39. An exterior cover for a laptop computer including a display portion and a keyboard portion, comprising:

a first elastic planar element for placement on an outside surface of the display portion, the first elastic planar element comprises a raised edge along a portion of a

perimeter of the first elastic planar element and a tab on the raised edge, wherein the tab extends over an inside surface of the display portion; and

a second elastic planar element for placement on an outside surface of the keyboard portion, the second elastic planar element being separate and independent from the first elastic planar element, the second elastic planar element comprises a raised edge along a portion of a perimeter of the second elastic planar element and a tab on the raised edge, wherein the tab extends over an inside surface of the keyboard portion.

40. The exterior cover of claim **9**, wherein the plurality of tabs on the raised edge of the first planar element extend from the raised edge at an angle of less than ninety degrees.

41. The exterior cover of claim **9**, wherein the plurality of tabs on the raised edge of the second planar element extend from the raised edge at an angle of less than ninety degrees.

42. The exterior cover of claim **9**, wherein the plurality of tabs on the raised edge of the first planar element extend from the raised edge at an angle of more than ninety degrees.

43. The exterior cover of claim **9**, wherein the plurality of tabs on the raised edge of the second planar element extend from the raised edge at an angle of more than ninety degrees.

44. The exterior cover of claim **9**, wherein the keyboard portion comprises a QWERTY keyboard.

45. The protective cover of claim **16**, further comprising a raised edge that extends perpendicularly from the first planar element.

46. The protective cover of claim **16**, further comprising a raised edge that extends perpendicularly from the second planar element.

47. The protective cover of claim **16**, wherein the plurality of tabs of the first planar element extend perpendicularly from the raised edge.

48. The protective cover of claim **16**, wherein the plurality of tabs of the second planar element extend perpendicularly from the raised edge.

49. The protective cover of claim **16**, wherein the plurality of tabs of the first planar element extend from the raised edge at an angle of less than ninety degrees.

50. The protective cover of claim **16**, wherein the plurality of tabs of the second planar element extend from the raised edge at an angle of less than ninety degrees.

51. The protective cover of claim **16**, wherein the plurality of tabs of the first planar element extend from the raised edge at an angle of more than ninety degrees.

52. The protective cover of claim **16**, wherein the plurality of tabs of the second planar element extend from the raised edge at an angle of more than ninety degrees.

53. The protective cover of claim **16**, wherein the keyboard portion comprises a QWERTY keyboard.

* * * * *

US005835344A

United States Patent [19]

Alexander

[11] **Patent Number: 5,835,344**

[45] **Date of Patent: Nov. 10, 1998**

[54] **PORTABLE COMPUTER SYSTEM WITH INTEGRAL CARRYING CASE**

[75] Inventor: **Forrest Thomas Alexander**, Houston, Tex.

[73] Assignee: **Compaq Computer Corporation,** Houston, Tex.

[21] Appl. No.: **715,198**

[22] Filed: **Sep. 18, 1996**

[51] **Int. Cl.**[6] **G06F 1/16**; H05K 5/00; B65D 85/00

[52] **U.S. Cl.** **361/683**; 206/320

[58] **Field of Search** 364/708.1; 206/305, 206/320; 150/165; 190/102, 119, 900–903; 312/208.1; 361/680–687; 400/715; 248/118.1

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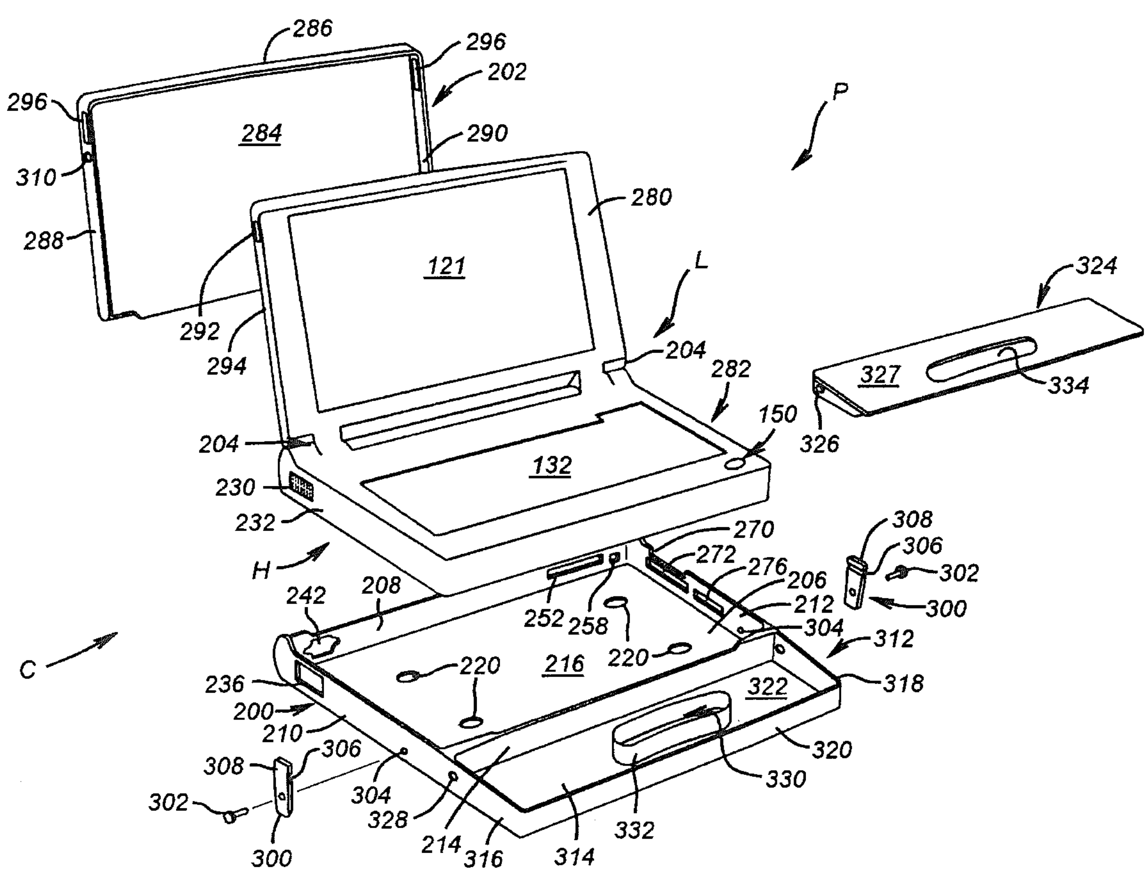
Primary Examiner—Michael W. Phillips
Attorney, Agent, or Firm—Pravel, Hewitt, Kimball & Krieger

[57] **ABSTRACT**

A portable computer is housed in an integral multi-purpose carrying case. The case protects the portable computer against damage when closed, yet the case is easily opened for use of the computer while in the case. Ergonomic wrist and arm support are provided to a user of the computer when by the case when it is opened. The case also furnishes dissipation of heat from the computer during use while it is resting on a user's lap.

22 Claims, 5 Drawing Sheets



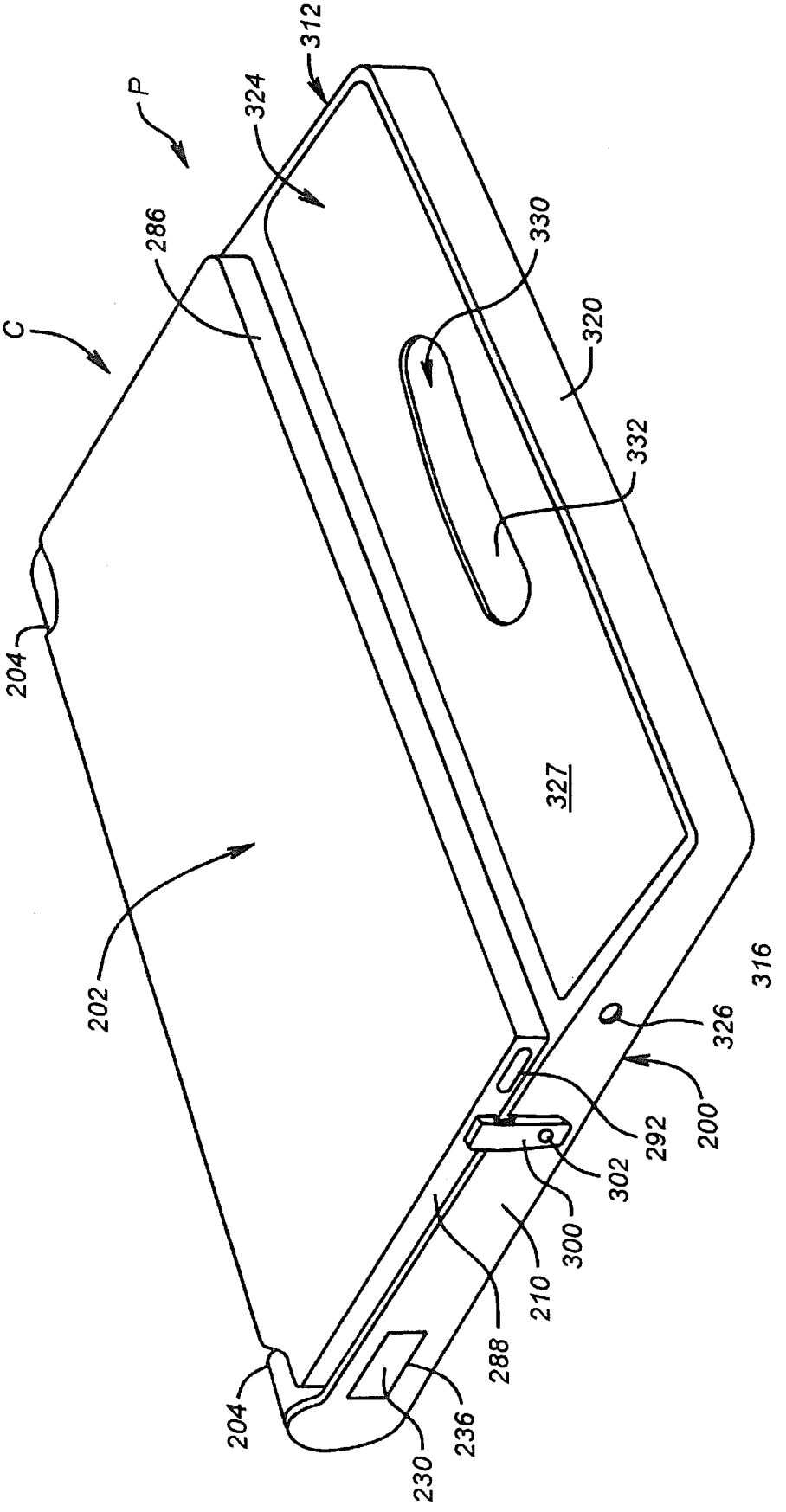

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FIG. 1

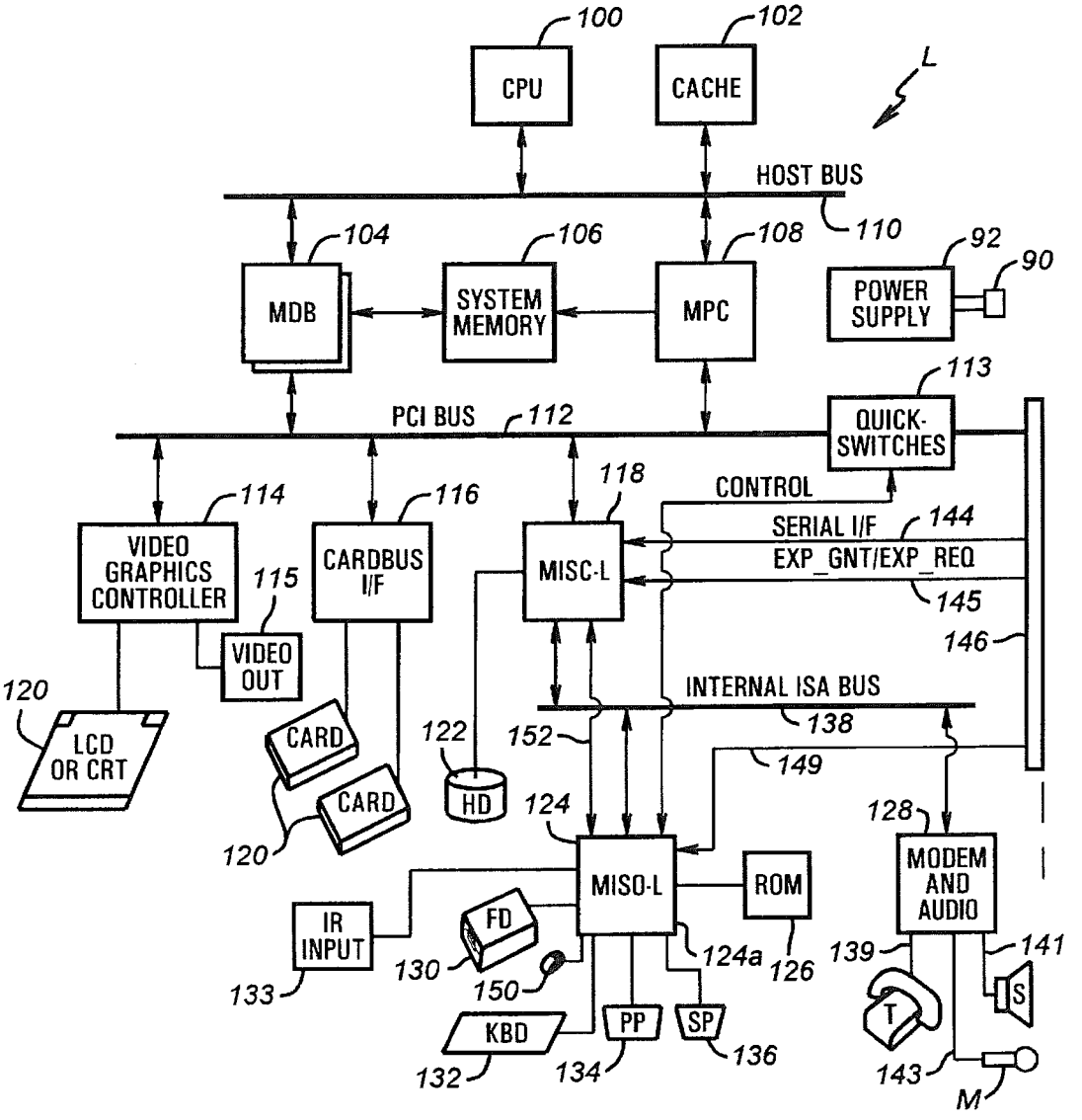
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FIG. 2

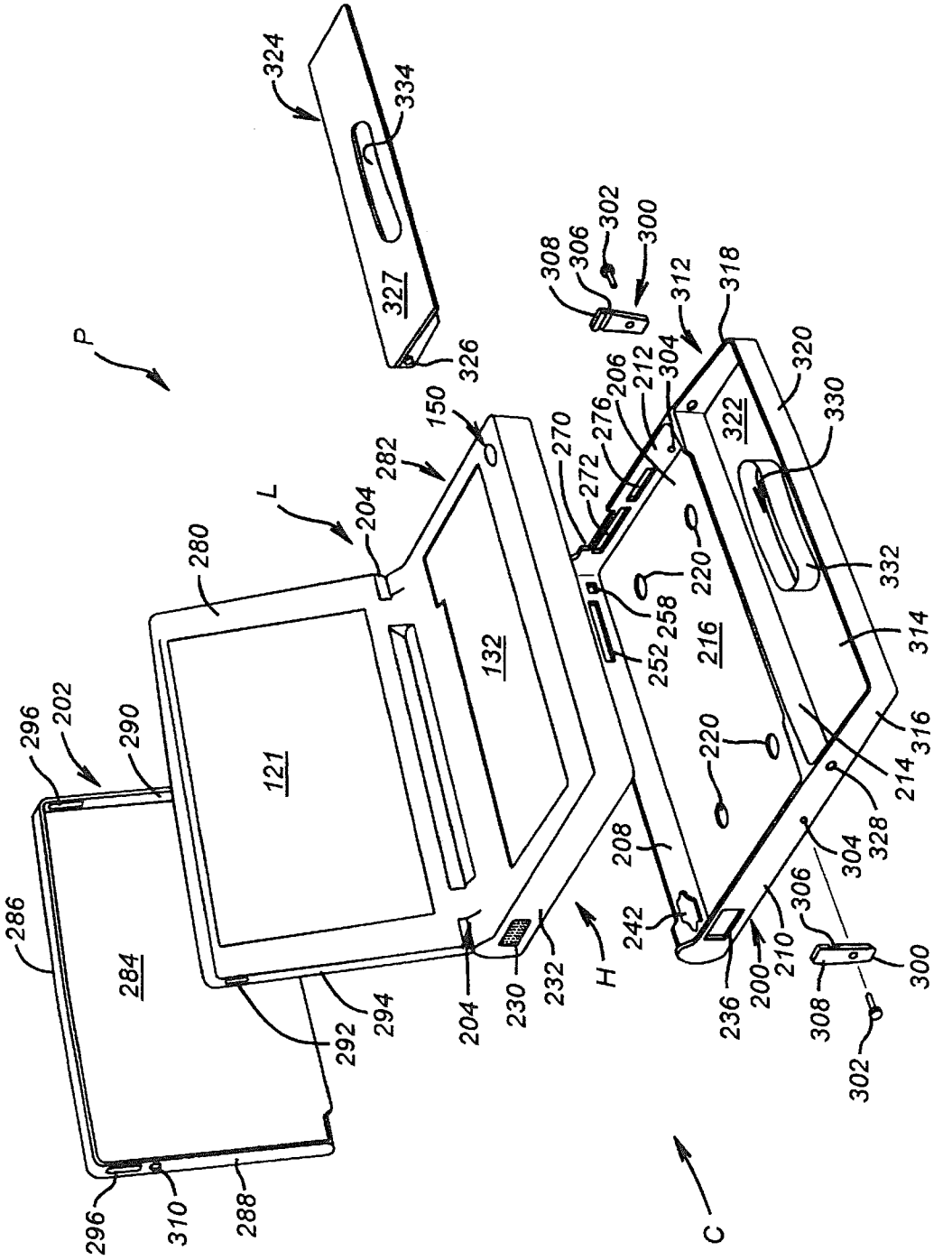
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FIG. 3

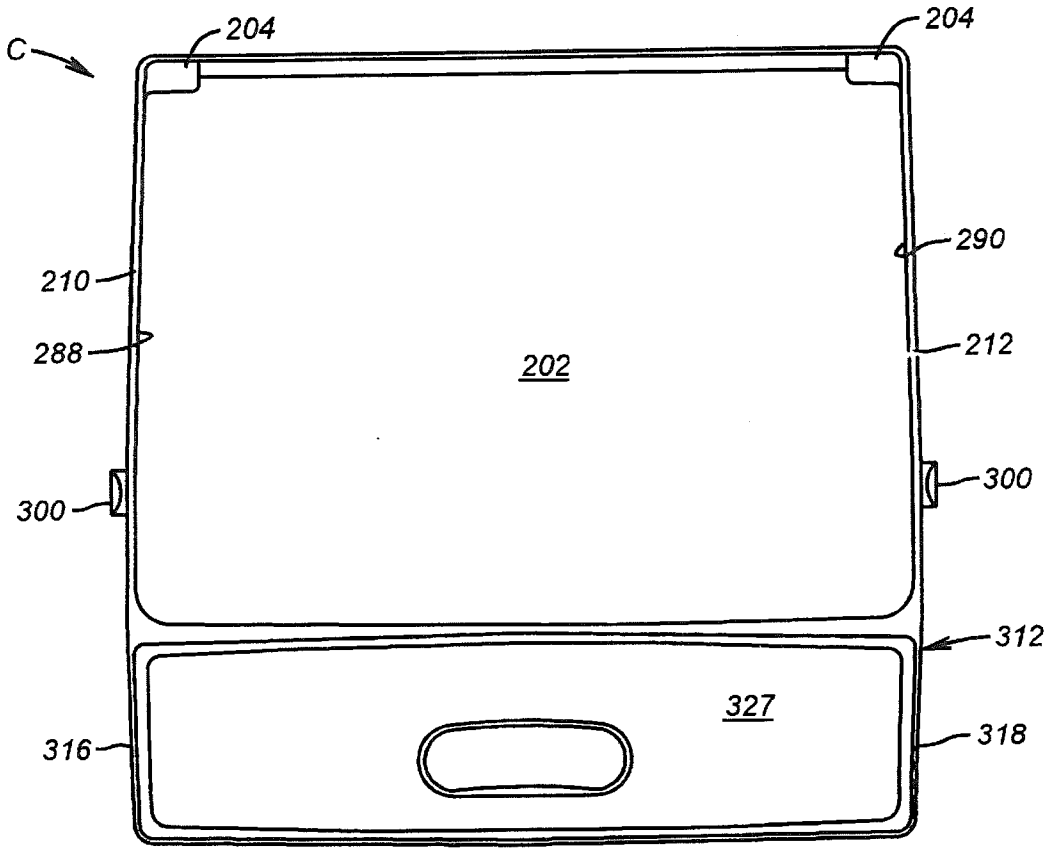


FIG. 4

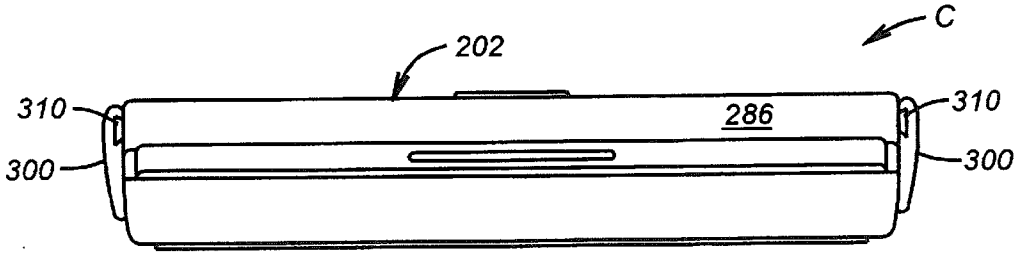


FIG. 5

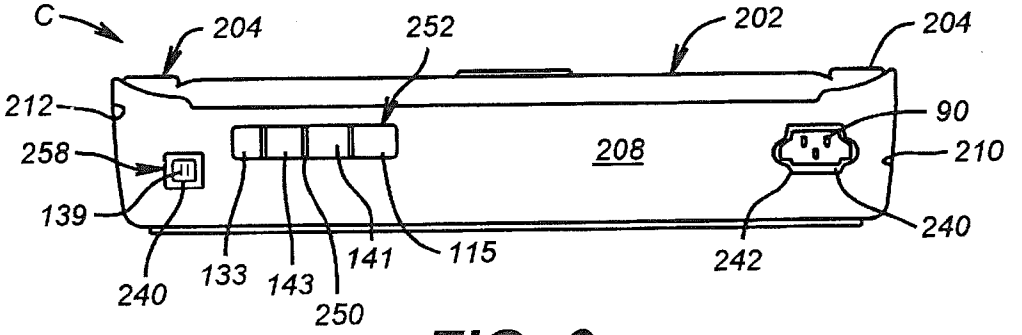


FIG. 6

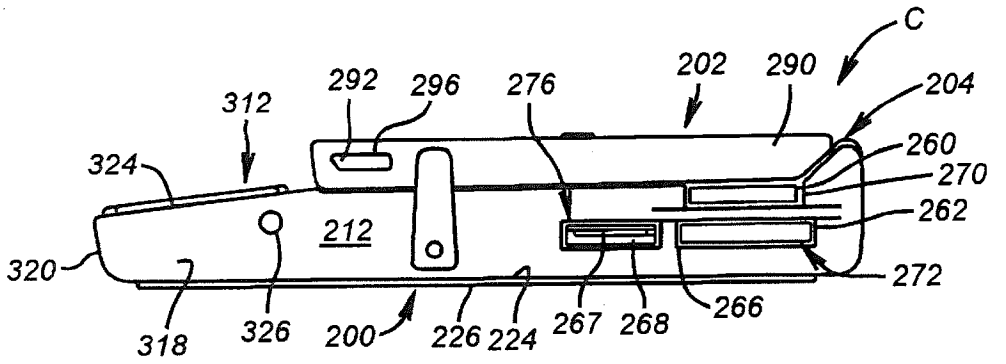


FIG. 7

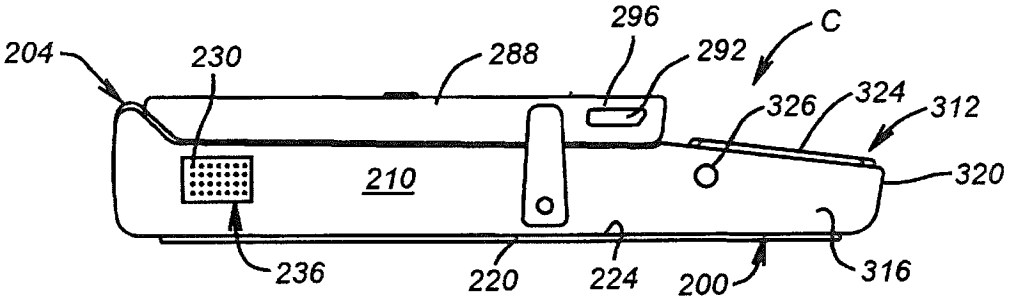


FIG. 8

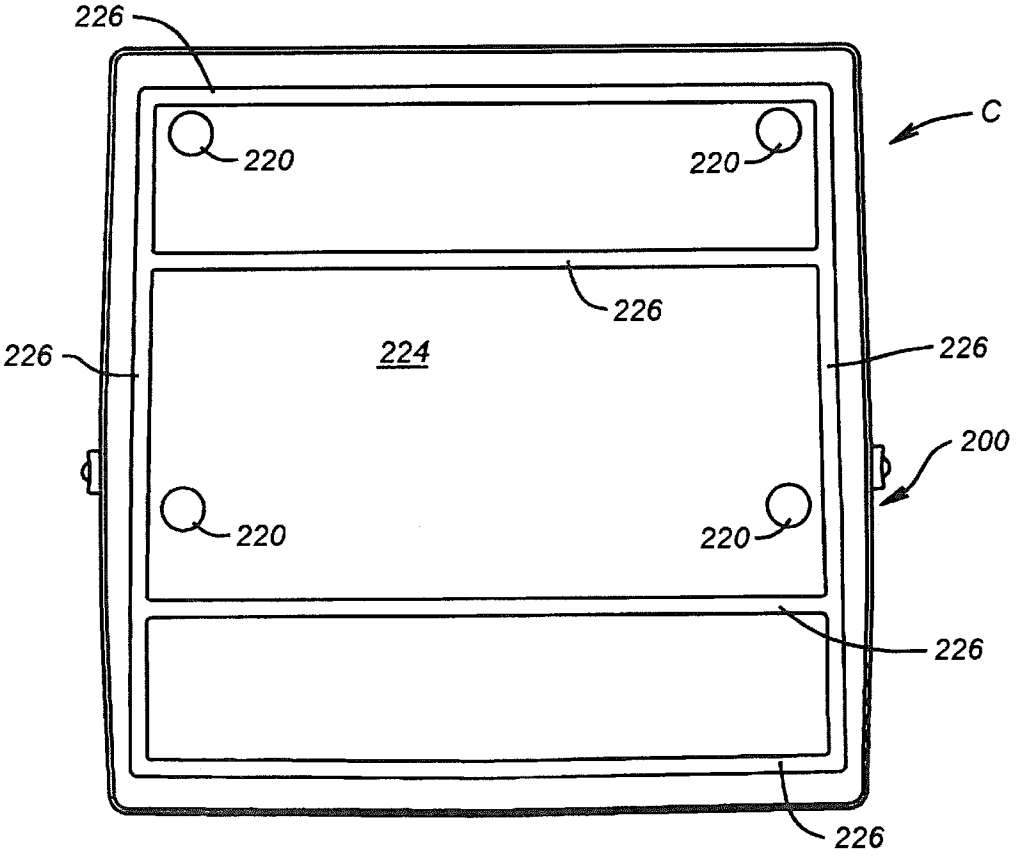


FIG. 9

PORTABLE COMPUTER SYSTEM WITH INTEGRAL CARRYING CASE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to portable computer systems, and more particularly ones with integral carrying cases.

2. Description of the Related Art

The ever expanding demand for, and use of, personal computers has been a notable feature of recent years. Among the types of personal computers which are quite widely used are the portable type, whether laptop or notebook variety.

Portable computers permit, among other advantages, a user to perform computations, prepare and edit messages and documents, and send and receive information at any number of what were previously inconvenient places. Portable computers may now be used while away from an office, or while in transit, and in the absence of a source of external power. Portable computers range in size from hand-held size up to a size comparable to a loose-leaf binder or notebook.

In a number of technologies, including computers and their usage, a field of study called ergonomics is of interest. Ergonomics deals with how the machines or equipment, such as computers, can be used with minimized physical discomfort for the user or operator, particularly if the use is respective or for more than brief duration. In portable computer systems, ergonomic support of a user's wrists and their lower arms while using laptop computers has been a recurrent area of interest. Portable computers have not, so far as is known, completely satisfied the interest expressed for ergonomic support of a user's forearms or wrists.

Also, so far as is known, portable computers have been provided with carrying bags which were in effect no more than fabric bags or satchel cases. Although helpful for transport purposes, these fabric bags offered little of any protection of the computer against mechanical damage from impact or shock.

The previous carrying bags did not readily permit use of the computer. The bag had to be removed from the computer if it became necessary to connect the computer to an external device (such as a modem or the like) or power supply. If the cover was removed, there was then the problem of where to store the cover while the computer was in use, particularly when the user was in transit. It was often awkward to use the computers while they were in the case, since the fabric of the case exhibited a tendency to slide off a user's lap. Further, extended use of the computer on a user's lap could at times give rise to discomfort from excess heat.

SUMMARY OF THE INVENTION

Briefly, the present invention provides a new and improved portable computer system with an integral carrying case. The computer system includes a processor board having at least one microprocessor mounted on it for processing data. The processor board also includes other computer system electronic components on it, and is contained in a housing. The computer system also includes a transport or carrying case in which the housing of the computer system is fitted. The case has a receptacle formed in it with dimensions in which the housing is snugly fitted.

The computer housing has ports and openings for modems, add-on devices or peripherals, external power connectors, air vents or outlets, and the like. The carrying case is provided with corresponding openings and ports in it.

Thus when the computer housing is fitted into the case, the portable computer system is adapted for connection with external devices and sources without having to be removed from its carrying case.

The carrying case is also provided with a support shelf which extends forwardly from the computer housing and its receptacle. The support shelf provides ergonomic support for a computer user's forearms while the computer is being used. A storage tray is provided within the support shelf for storage of equipment such as a cord, connector, stylus or the like. The carrying case is also provided with a carrying handle.

The portable computer system of the present invention with its integral carrying case protects the computer system from damage when closed, yet is easily opened. Once opened, the computer system may be operated in a stand-alone mode or easily connected to other external devices or power supplies. While in use, the carrying case provides ergonomic support for the computer user's forearms or wrists. The case also provides outlets for dissipation from heat from within the computer while in use.

BRIEF DESCRIPTION OF THE DRAWINGS

A better understanding of the present invention can be obtained when the following detailed description of the preferred embodiment is considered in conjunction with the following drawings, in which:

FIG. **1** is an isometric view of a computer system according to the present invention.

FIG. **2** is a schematic electrical circuit diagram of the computer system of FIG. **1**.

FIG. **3** is an exploded isometric view of the computer system of FIGS. **1** and **2**

FIG. **4** is a plan view of the computer system of FIGS. **1** and **2**.

FIG. **5** is a front elevation view of the computer system of FIGS. **1** and **2**.

FIG. **6** is a rear elevation view of the computer system of FIGS. **1** and **2**.

FIG. **7** is a right side elevation view of the computer system of FIGS. **1** and **2**.

FIG. **8** is a left side elevation view of the computer system of FIGS. **1** and **2**.

FIG. **9** is a bottom view of the computer system of FIGS. **1** and **2**.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

In the drawings, the letter P designates generally a portable computer system according to the present invention, including a housing H (FIG. **3**) containing a laptop computer L and an integral carrying case C (FIG. **1**) into which the housing H is engagingly fitted. When so assembled, the portable computer P can be easily transported in the case C, but can be readily opened and used as an integral unit. Ergonomic wrist and arm support are provided to a user of the computer system P when in the integral carrying case C when both are opened.

The laptop computer L of the portable computer system P includes at least one microprocessor or CPU **100** (FIG. **2**) mounted on a conventional processor board B in the conventional manner. FIG. **2** is a schematic block diagram of the laptop computer L which is an operationally autonomous apparatus which is preferably of a type which is detachable

from an expansion base for remote computing operations. The expansion base when used typically provides expandability for functions not included in the laptop portion L due to space or power concerns. The laptop computer L may be of a type which is not connectable to an expansion base, as well. While the laptop computer L is docked into an expansion base or otherwise connected by at a power supply inlet **90** (FIGS. **2** and **6**) to alternating current power, the laptop computer L operates on AC power. Rechargeable batteries in a rechargeable power supply **92** are also being recharged at this time. When computer L is detached from the source of AC power, the rechargeable power supply **92** (FIG. **2**) provides power and the laptop computer L operates from battery power.

The Central Processing Unit (CPU) **100** is provided in the laptop computer L which is a conventional microprocessor such as the Pentium® from Intel Corporation or a similar processor. The CPU **100** couples to a host bus **110** for communicating with system logic such as a cache memory **102**, a Mobile Peripheral Component interconnect bus cache controller (MPC) **108** and pair of Mobile Data Buffers (MDB) **104**. The cache memory **102** is a conventional cache memory for the CPU **100** and preferably employs high speed synchronous burst static Random Access Memory (RAM). The MPC **108** provides an interface to the cache memory **102**, and includes tag RAMs and other logic for creating various cache ways, size, and speed configurations of the cache memory **102**.

The MPC **108** and the MDB **104** are also coupled to a system memory **106** and a peripheral component interconnect (PCI) bus **112**. The MPC **108** provides address and control to system memory **106**, which is typically comprised of up to 256 MByte of conventional dynamic random access memories (DRAMs). The MDB **104** provides a 64 bit data path between the host bus **110** and the system memory **106** and provides a 32-bit data path to the PCI bus **112**. The MPC **108** and MDB **104** have three major functional interfaces: a processor/cache interface, a system memory interface, and a PCI bus interface. The MDB **104** is responsible for buffering data between the three interfaces while the MPC **108** is responsible for handling addressing, command and control. Each of these interfaces operate independently from the other and includes queues for read and write posting between any two of the three interfaces. The processor/cache interface allows the CPU **100** to pipeline cycles into read cycles and allows snoop accesses to the tag RAM to occur while the pipeline cycles are executing. The memory interface controls the system memory **106** and generates control signals to the MDB **104**. The interface also allows read ahead operations for those PCI masters issuing a read multiple command. The PCI interface allows MPC **108** to act as a PCI master when the CPU **100** is accessing the PCI bus **112**, or as a PCI slave when a PCI device accesses system memory **106**.

The PCI bus is designed to have a high throughput and to take advantage of an increasing number of local processors supporting I/O functions. For example, most disk controllers, particularly Small Computer System Interface (SCSI) controllers, and network interface cards (NICs) include a local processor to relieve demands on the host processor. Similarly, video graphics boards often include intelligent graphics accelerators to allow higher level function transfer. Typically these devices incorporate the capability to act as bus masters, allowing them to transfer data at the highest possible rates. As mentioned, potential bus masters include the CPU/main memory subsystem (via MPC **108**).

The PCI bus **112** provides a communications conduit between the laptop computer L and an expansion base. The PCI bus **112** in the laptop computer L includes a Quickswitch **113** for each signal of the PCI bus **112**. In the preferred embodiment, the Quickswitches **113** are low loss series in-line MOSFET devices with the gate (control line) driven by a control signal CONTROL from a Mobile Super Input Output Logic or MSIO-L **124**. The Quickswitch **113** can thereby be used to facilitate hot plug capabilities. When the laptop computer L is docked into an expansion base and the Quickswitches **113** are turned on, an extension portion of the PCI bus **112** present in the expansion base is coupled to the PCI bus **112** via expansion connector **146** to provide the extended PCI bus **112**. Details of the expansion connector **146** and associated docking/undocking logic are provided in commonly owned co-pending U.S. patent application Ser. No. 08/684,255 entitled "COMPUTER SYSTEM INCORPORATING HOT DOCKING AND UNDOCKING CAPABILITIES WITHOUT REQUIRING A STANDBY OR SUSPEND MODE" filed Jul. 19, 1996, which is incorporated herein by reference.

In the laptop computer L, the PCI bus **112** further couples to a video graphics controller **114**, a Cardbus interface **116** and a Mobile Integrated System Controller—Laptop **118** (MISC-L). The video graphics controller **114** further couples to a low power liquid crystal display (LCD) **121** or alternatively a cathode ray tube (CRT) or any other suitable monitor. The video graphics controller **114** is also provided with an output terminal **115** (FIGS. **2** and **6**) for driving an external video monitor. The Cardbus interface **116** is provided for communicating with add-on cards **120** such as networking cards, modem cards, solid state storage cards and rotating storage cards preferably of a Personal Computer Memory Card International Association (PCMCIA) style. The MISC **118** provides an interface for an Industry Standard Architecture (ISA) bus **138**, and an integrated drive electronics (IDE) hard drive interface for communicating with hard drives **122**. The MISC **118** is also configurable based on an input pin for use in the laptop computer L and is further coupled to the internal ISA bus **138**.

The MISC **118** bridges the PCI bus **112** to the ISA bus **138** or an ISA bus in the expansion base. The MISC **118** acts as both a master and slave on the PCI bus **112** and a bus controller on the ISA buses. The MISC **I18** further preferably includes bus arbitration circuitry whose details are contained in commonly owned, co-pending application Ser. No. 08/684,255 incorporated by reference above.

In the preferred embodiment of the invention, the MISC **118** also as is conventional incorporates **8237** compatible direct memory access (DMA) controllers, an enhanced DMA controller for fast IDE hard drives, **8254** compatible timers, an **8259** compatible interrupt controller, hot docking support logic, system power management logic, and Plug-and-Play support.

The MISC **118** and the ISA bus **138** provide support for standard ISA peripherals such as those combined in a Mobile Super Input/Output (MSIO) **124** peripheral. The MSIO **124** peripheral has a combination of standard ISA peripherals, such as: a 146818 compatible real time clock (RTC), a floppy controller for interfacing to standard floppy drives **130**; an **8051** compatible microcontroller for communicating with a standard keyboard **132**, a conventional infrared communication input receiver **133** (FIGS. **2** and **6**) and pointing device **150** (FIG. **2**), for performing scanning and key code conversions on the keyboard **132**, and for performing power management and hot docking functions; a universal asynchronous receiver transmitter (UART) for

providing standard serial ports **136**; and parallel port logic for a parallel port **134**. A read only memory (ROM) **126** couples to the MSIO **124** for providing code to the **8051** microcontroller. Additionally, the ROM **126** provides basic input/output services (BIOS) code to the CPU **100**, which is copied from the ROM **126** and shadowed in system memory **106** upon system initialization so that thereafter the **8051** microcontroller may access the ROM **126**. A 1 bit MSIO Serial Bus (MSB) is provided for shadowing registers containing information relating to power management and hot docking. Ideally, the bus is designed to be extensible and very low latency.

When the laptop L is docked to an expansion base, the MSIO-L **124**, and system components in the expansion base are coupled by an a standard I^2C-bus **149**. The inter-integrated circuit or I^2C-bus **149** is a simple bi-directional two wire bus used to provide efficient control and identification functions between integrated circuitry. Details of the I^2C-bus can be found in the "The I^2C-Bus and How to Use It (Including Specification)," published by Phillips Semiconductors, January 1992. Briefly, the I^2C-bus **149** is formed of two lines: a serial clock line (SCL) and a serial data line (SDA). Each of these lines is bidirectional. The SCL line provides the clock signal for data transfers which occur over the I^2C-bus. The SDA line is the data line for data transfers which occur over the I^2C-bus. Each device connected to the I^2C-bus is recognized by a unique address. Low value series resistors (not shown) are typically provided at each device connection for protection against high-voltage spikes.

In the laptop computer L, a modem and audio peripheral **128** is also provided and coupled to the ISA bus **138**. The modem and audio peripheral **128** includes a standard telephony communications port **139** (FIGS. **2** and **6**) for coupling to a telephone T, and interfaces **141** and **143** for coupling to stereo speakers S and a microphone M, respectively.

The case C of the portable computer system P includes a lower case body **200** and a case cover **202** which is movably mounted to the case body **200** at a connector mechanism which is a part of the case C of the laptop computer L. A suitable connector mechanism, for example, is provided in the form of a pair of hinged or pivoted connectors **204** (FIG. **3**) at rear side portions of the laptop computer L. Both the lower case body **200** and the cover **202** are preferably formed of a molded synthetic resin, preferably a suitable polypropylene, of a suitable rigidity and strength.

The lower case body **200** includes a receptacle **206** (FIG. **3**) defined by a rear wall **208**, sidewalls **210** and **212** and a forward wall or partition **214**. The walls of the receptacle **206** are comparable in height to side walls of the housing H of the laptop computer L. The receptacle **206** of the case C is provided with a base or floor **216** and the interior or lateral dimensions between the rear wall **208** and partition **214**, and the sidewalls **210** and **212**, are selected to have an areal extent slightly greater than the corresponding lateral dimensions of the housing H. The particular dimensions of the receptacle **206** are thus related to the dimensions of the particular type of laptop computer L to be mounted in the case C. With the dimensional relation between the housing H set forth above, in this way, the housing H may be inserted and fitted firmly in place within the receptacle **206** with adequate frictional or mechanical engagement so that the housing H is fittingly received and firmly held in place in the case C once inserted. For removal purposes, a suitable number of access ports or openings **220** (FIGS. **3** and **9**) are formed in the base **216** of the case C so that the housing H

may be contacted by a user and pushed or urged out of the receptacle **206** when necessary. A base or bottom wall **224** of the case C is provided with a set of raised spacer ribs **226** extending across the bottom wall **224** for supporting the portable computer system P on a table, a user's lap, or other suitable work surface.

The laptop computer housing H is provided with an air outlet **230** (FIG. **3**) in a sidewall **232** so that heat may be vented from its interior. The case C correspondingly has an air outlet **236** (FIGS. **3** and **8**) formed in the sidewall **210** at a position aligned with the air outlet **232** of the housing H when the laptop computer L is mounted within the receptacle **206**. In this way, heat from within the interior of the laptop computer L is vented externally of both the case C and the housing H when the computer P is in an operating mode.

The power supply connector **90** (FIGS. **2** and **6**) of the laptop computer L is mounted on a rear wall **240** of the housing H so that an electrical supply cord and connector may be connected. The rear wall **208** of the case C has a port or opening **242** (FIGS. **3** and **6**) formed in it in alignment with the connector **90** so that the portable computer system P may be connected to receive electrical power while mounted in the case C.

The laptop computer L includes a number of input/output (I/O) devices external of the housing H for providing external data inputs to the microprocessor **200** and other components of the personal computer system P, such as interface **143** (FIGS. **2** and **6**) for the microphone M, interface **141** for the headphone/speaker S, video terminal **115** and the infrared (IR) input **133**. These connectors or terminals are accessible at a location **250** (FIG. **6**) on the rear wall **240** of the housing H. The rear wall **208** of the case C has a data input port **252** (FIGS. **3** and **6**) correspondingly sized formed in it in alignment with the I/O terminals accessible at the location **250**.

Similarly, the connector or phone terminal jack **139** (FIGS. **2** & **6**) for connection of the modem **128** to the telephone T is formed in the rear wall **240** of the housing H as shown in FIG. **6**. The rear wall **208** of the case C has a second data input port **258** (FIGS. **3** & **6**) correspondingly sized and formed in it in alignment with the phone connector terminal **139**. In this manner, the various input/output (I/O) devices external of the housing H of the personal computer system P are provided with access to the laptop computer L while the computer system P is mounted within its case C and operating.

The laptop computer L is also adapted to receive a number of external cards **120** (FIG. **2**), such as an international modem or other type of add-on cards of the type such as the PCMCIA style, as set forth above. Two card slots **260** and **262** (FIG. **7**) are accessible at openings formed in a sidewall **266** of the housing H. The sidewall **212** of the case C has a corresponding pair of openings **270** and **272** (FIGS. **3** & **7**) formed in it in alignment with the slots **260** and **262** so that the particular types of add-on cards **120** desired to used with the laptop computer L may be inserted into and connected with the laptop computer L while the computer L is mounted within its transport case C.

For add-on cards of the type shown at **120**, an ejection lever **267** (FIG. **7**) is accessible through an opening **268** formed in the sidewall **266** of the housing H. An opening **276** FIGS. **3** & **7**) is formed in the sidewall **212** of the case C in alignment with the opening **266** for access to the ejection lever **267** so that the add-on cards **120** may be disconnected from the laptop computer L and removed therefrom while

the personal computer system P is mounted within its carrying case C.

The data display **121** (FIGS. **2** & **3**) of the portable computer system P is contained in a display panel **280** portion of the housing H hingedly or pivotally mounted with the lower body **282** of the housing H. The display panel **280** of the housing H is fitted within an interior recess **284** (FIG. **3**) of the case cover **202** defined by a front wall **286** and side walls **288** and **290**. As with the receptacle **206**, the lateral dimensions of the display panel portion of the housing H and the interior dimensions of the recess **284** are substantially equal. In this manner, the display panel portion **280** of the housing H is thus fittingly received within the case cover **202** of the case C.

The display panel **280** of the housing **H** is pivotally mounted at the hinged connector mechanisms **204** between an open position (FIG. **3**) and a closed or transport position (FIG. **1**) on the lower body portion of the housing H. The display panel **280** has a releasable locking mechanism in the form of movable buttons or slides **292** mounted along each of its side walls **294**. The case cover **202** has a set of release ports **296** formed at each of its sidewalls **288** and **290** aligned with the release mechanism buttons or slides **292** of the locking mechanism data display panel **280**. When the release mechanisms **292** are engaged, the display panel housing **280** and its fitted case cover **202** are then pivotally movable upwardly at hinged connectors **204** with respect to the remainder of the housing H and case C. Accordingly the data display **121** is visible (FIG. **3**) and the keyboard **130** and mouse or pointer **150** are accessible, while the computer P is contained in it case C.

A connector clasp **300** is pivotally mounted by a connector pin or stud **302** to an opening **304** formed in each of the side walls **210** and **212** of the lower case body **200**. Each connector clasp **300** has a connector slot **306** formed in an upper end **308**. The connector slots **306** are adapted to slide over and engage corresponding connector tabs or studs **310** mounted extending outwardly from each of the side walls **288** and **290** of the case cover **202**. The connector clasps **300** and the connector tabs **310** serve as an additional closure or locking mechanism for the case C and for the portable computer system P in addition to the release mechanisms **292**.

The case C includes a support shelf **312** formed extending forwardly from the receptacle **206** to support a computer user's forearms and wrists while using the portable computer system P. The support shelf **312** (FIG. **3**) is preferably integrally formed with the remainder of the lower case body **200** extending forwardly from the inner forward wall or partition **214**. The support shelf **312** includes a storage case or tray **314** formed within it defined by sidewalls **316** and **318** extending forwardly from the partition **214** to a front wall **320** and defined by a lower wall portion **322** which is a forward extension of the base or floor **216** of the receptacle **206**. The storage tray **314** is adapted to receive connector cords or cables for the portable computer system P as well as pointers, styluses or other apparatus for use with the portable computer system P.

The support shelf **312** further includes a pivotally movable cover **324** which has connectors pins **326** formed extending outwardly from side portions thereof for insertion into corresponding openings **328** formed in each of the sidewalls **316** and **318**. The movable cover **324** is thus pivotable upwardly from the storage tray **314** to open and close the storage tray for access to the components therein. Preferably, an upper surface **324** of the movable cover **324** is provided with a soft and yieldable synthetic resin. This provides a padded upper surface for the movable cover **324** in supporting a user's wrists and forearms when using the portable computer system P.

An upwardly extending interior opening or passage **330** (FIG. **3**) is formed in the support shelf **312** within an upwardly extending wall **332** formed within the storage tray **314**. A correspondingly shaped opening **334** is formed in the movable cover **324**. When the movable cover **324** is moved downwardly to close the storage case **314** (FIG. **1**) the openings **330** and **334** are aligned, providing a carrying handle for gripping the portable computer system P within its case C for carrying and transporting.

From the foregoing, it can be seen that the portable computer system P of the present invention can be connected to external input/output devices and power supplies and operated while contained with its case C. The portable computer P can also be easily transported in the case C. A user can, however, readily open the case C and operate the integrally contained computer P while in transit or at a remote location. Further, ergonomic wrist and arm support are provided for the user while using the computer P within its integral carrying case C.

The foregoing disclosure and description of the invention are illustrative and explanatory thereof, and various changes in the size, shape, materials, components, circuit elements, wiring connections and contacts, as well as in the details of the illustrated circuitry and construction and method of operation may be made without departing from the spirit of the invention.

What is claimed is:

1. A portable computer system, comprising:

a processor board having at least one microprocessor mounted thereon for processing data;

a housing containing said processor board;

a data display for displaying data processed by said microprocessor;

a display panel containing said data display;

a case having said housing fitted therein;

said case having:

a lower case body with a receptacle formed therein to fittingly receive said housing; and

a case cover movable mounted with said lower case body to open and close said case;

said case cover having said display panel mounted therein, and including

a release mechanism for allowing movement of said display panel with respect to said case cover.

2. The portable computer system of claim **1**, wherein:

said case has an opening formed therein adjacent to said receptacle for access to apply force to remove said housing from said receptacle.

3. The portable computer system of claim **1**, further includes an I/O device in said housing for connecting said microprocessor to an external data input; and

wherein said case has a data input port formed therein for passage of a connector connecting said I/O device to external data input.

4. The portable computer system of claim **3**, wherein said external data input is modem.

5. The portable computer system of claim **3**, wherein said external data input is a infrared signal source.

6. The portable computer system of claim **3**, wherein said I/O device in said housing connects said microprocessor to an external data output and wherein a port in said case

provides passage of a connector connecting said I/O device to said external data output and wherein said external data output is a modem.

7. The portable computer system of claim **3**, wherein said I/O device in said housing connects said microprocessor to an external data output and wherein a port in said case provides passage of connector connecting said I/O device to said external data output and wherein said external data output is a loudspeaker.

8. The portable computer system of claim **3**, wherein said I/O device in said housing connects said microprocessor to an external data output and wherein a port in said case provides passage of a connector connecting said I/O device to said external data output and wherein said external data output is a multimedia video display.

9. The portable computer system of claim **3**, wherein said I/0 device in said housing connects said microprocessor to an external data output and wherein a port in said case provided passage of a connector connecting said I/O device to said external data output and wherein said external data output is a microphone.

10. The portable computer system claim **3**, wherein said I/O device in said housing connects said microprocessor to an external data output and wherein a port in said case provides passage of a connector connecting said I/O device to said external data output and wherein said external data output is a headphone.

11. The portable computer system of claim **1**, wherein said computer system includes:

an air outlet in said housing venting heat from said housing; and wherein:

said case has an air outlet past formed in said receptacle aligned with said housing air outlet for venting heat from said housing externally of said case.

12. The portable computer system of claim **1**, further including;

a connector mechanism for attaching said case cover to said lower case body.

13. The portable computer system of claim **1** further including:

said case cover having a release port formed in it adjacent said display panel release mechanism.

14. The portable computer system of claim **1**, wherein said case includes:

a support shelf extending forward from said receptacle to support a computer user's forearms while using the computer.

15. The portable computer system of claim **14**, wherein:

said support shelf has a carrying handle formed therein.

16. The portable computer system of claim **14**, further including:

a storage tray formed in said support shelf.

17. The portable computer system of claim **16**, further including:

a movable cover for opening and closing said storage tray.

18. The portable computer system of claim **1**, wherein said case includes:

a storage tray formed in said case extending forward from said receptacle.

19. The portable computer system of claim **18**, further including:

movable cover for opening and closing said storage tray.

20. The portable computer system of claim **19**, wherein:

said movable cover has a padded upper surface.

21. The portable computer system of claim **1**, wherein:

said case has a carrying handle mounted therewith.

22. A portable computer system comprising:

a processor board having at least one microprocessor mounted thereon for processing data;

a data display for displaying data processed by said microprocessor;

a housing comprising:

a lower body containing said processor board; and

a display panel containing said data display, said display panel connected to the lower body; and

a case comprising a lower case body and a case cover, said case including:

said lower case body having said housing lower body fitted therein;

said case cover having said display panel fitted therein, and

said display panel including a release mechanism for allowing movement of said display panel with respect to said case cover.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 5,835,344
DATED : November 10, 1998
INVENTOR(S) : Forrest Thomas Alexander

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

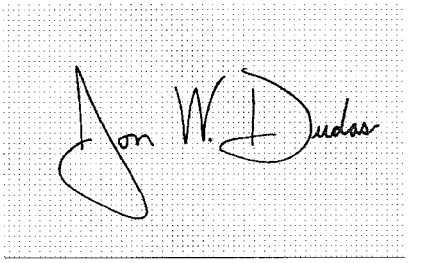
Column 8,
Line 45, delete "movable" and insert therefor -- movably --
Line 59, after "to" insert -- the --
Line 62, after "is" insert -- a --

Column 9,
Line 19, delete "provided" and insert therfor -- provides --

Column 10,
Line 19, after "including" insert -- a --

Signed and Sealed this

Twenty-sixth Day of July, 2005



JON W. DUDAS
Director of the United States Patent and Trademark Office

US006480377B2

(12) United States Patent
Genest et al.

(10) Patent No.: US 6,480,377 B2
(45) Date of Patent: Nov. 12, 2002

(54) **PROTECTIVE CASE WITH A KEYBOARD FOR A HANDHELD COMPUTER**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 120 days.

(21) Appl. No.: **09/753,711**

(22) Filed: **Jan. 4, 2001**

(65) **Prior Publication Data**

US 2002/0101705 A1 Aug. 1, 2002

(51) **Int. Cl.**[7] **G06F 1/16**; H05K 5/02

(52) **U.S. Cl.** **361/686**; 361/683; 345/169; 710/303

(58) **Field of Search** .... 361/686, 680, 361/681, 683; 345/168, 169, 905; 400/489, 693; 710/303, 304; 235/145 R, 145 A, 146

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(57) **ABSTRACT**

A protective case for a handheld computer including a computer attachment portion and a computer cover portion. The computer attachment portion has a data connector adapted to be electrically coupled with a data port of the handheld computer. The computer cover portion has a keyboard that is electrically coupled to the data connector on the computer attachment portion. The computer cover portion is movably connected to the computer attachment portion for movement between (a) a computer protecting position wherein the cover portion is positioned in an overlying relationship with respect to the front side of the handheld computer, and (b) a computer operating position wherein the cover portion is moved out of the overlying relationship to enable the user to view a display screen of the handheld computer and operate the keyboard to input data into the processor.

70 Claims, 7 Drawing Sheets

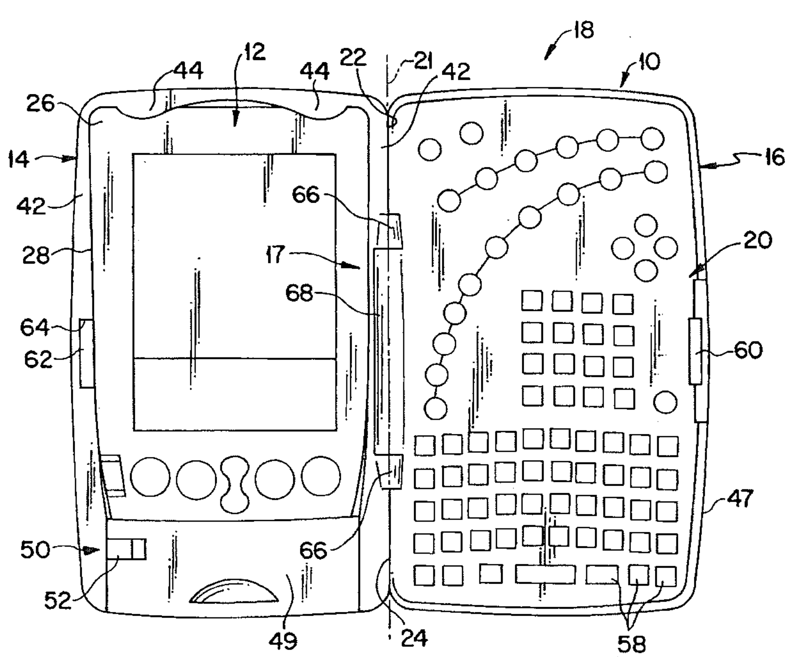
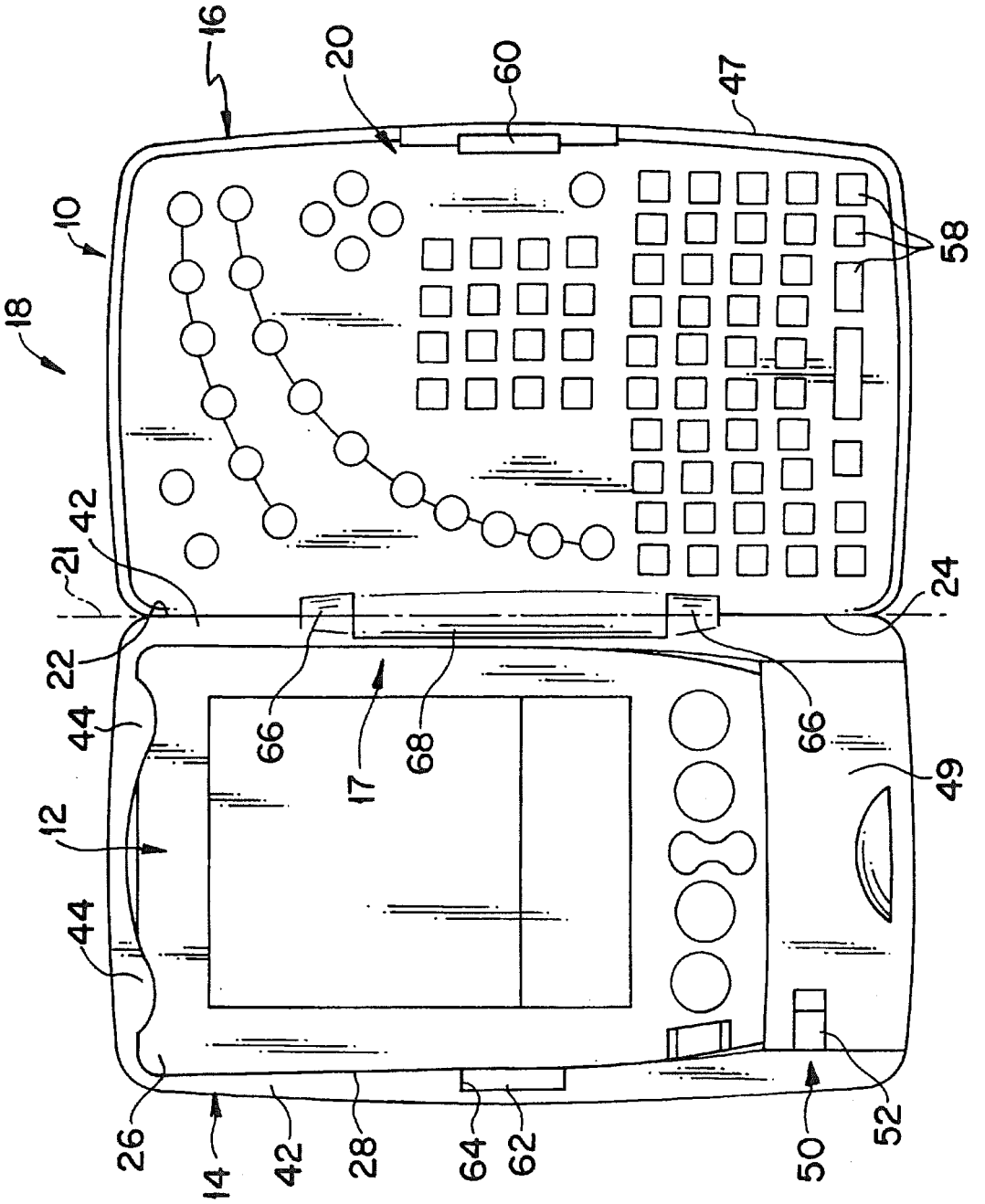


FIG. 1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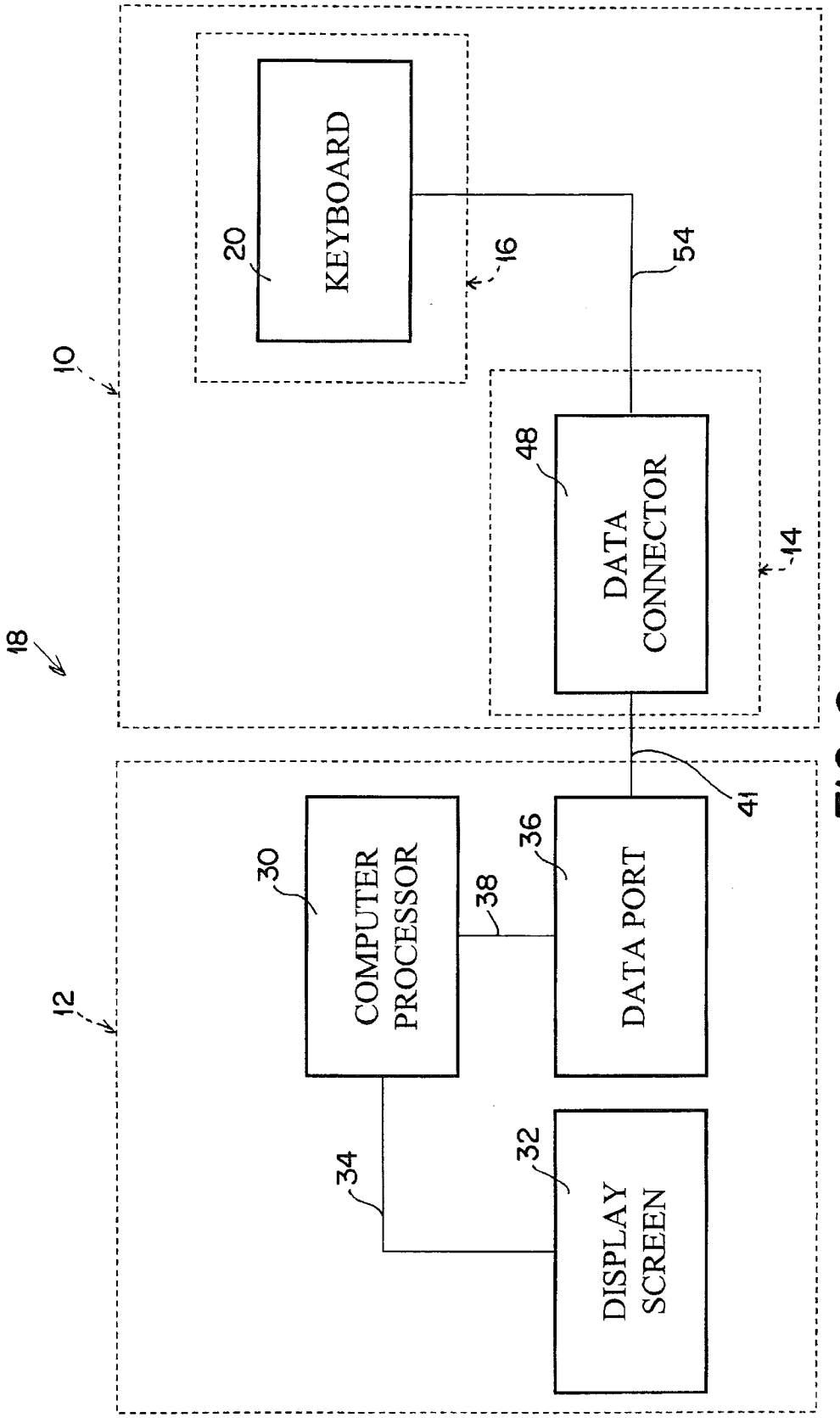
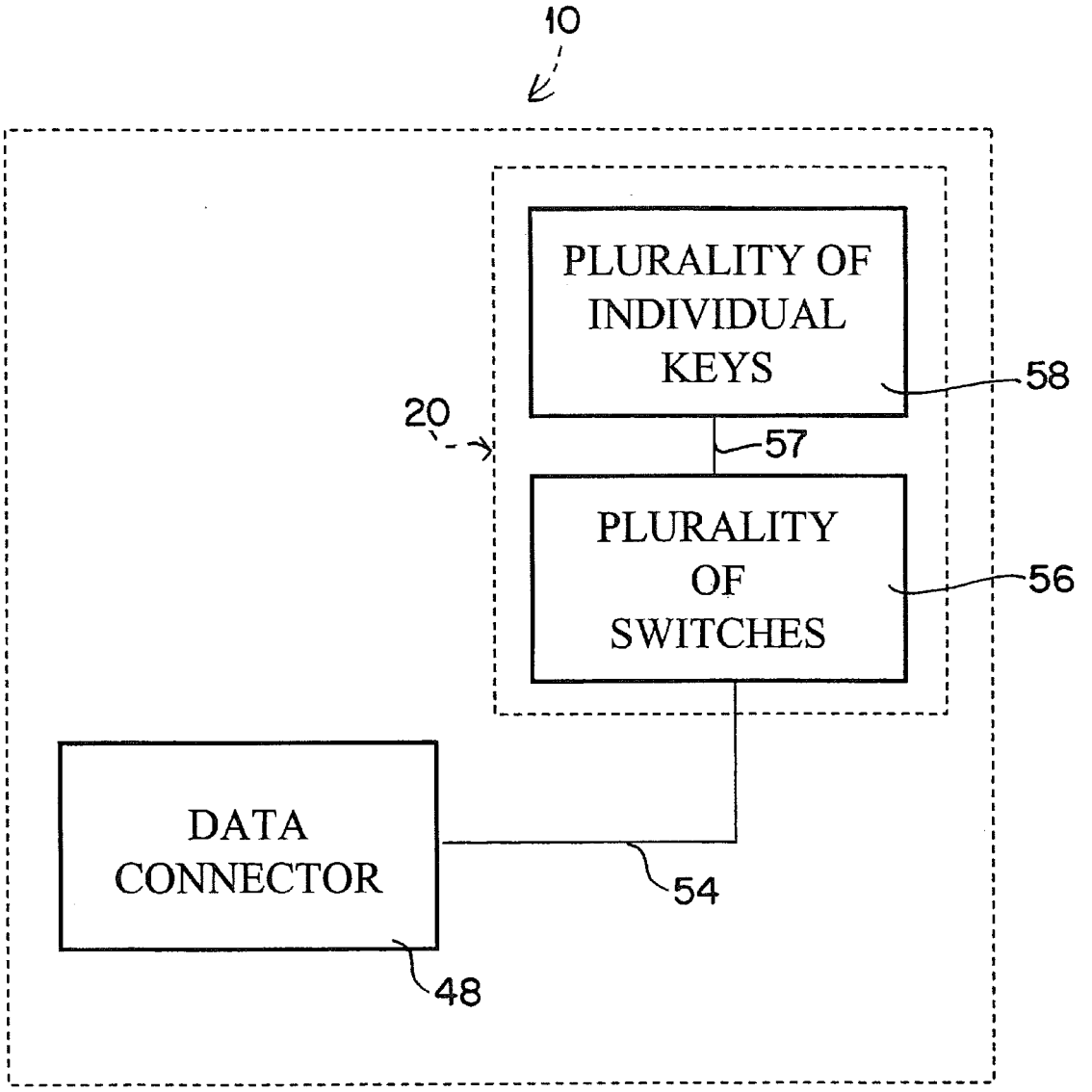

KEYBOARD
20
16
54
10
48
DATA CONNECTOR
14
18
41
30
COMPUTER PROCESSOR
38
36
DATA PORT
12
34
32
DISPLAY SCREEN

FIG. 2


10
PLURALITY OF INDIVIDUAL KEYS
58
20
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PLURALITY OF SWITCHES
56
DATA CONNECTOR
54
48

FIG. 3

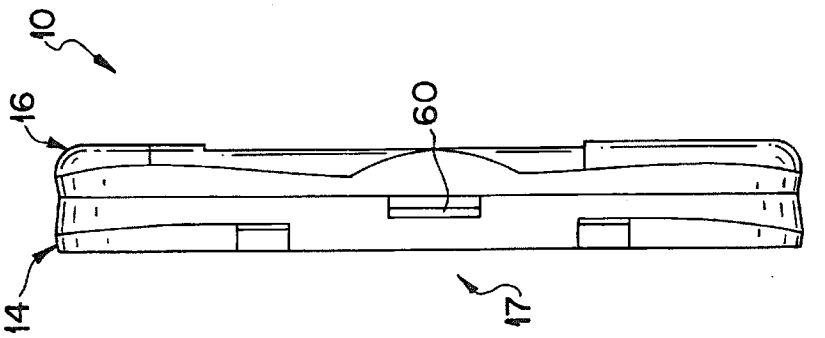

FIG. 6

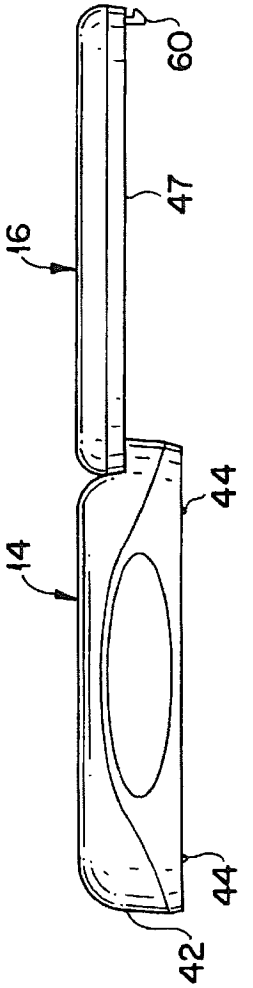

FIG. 5

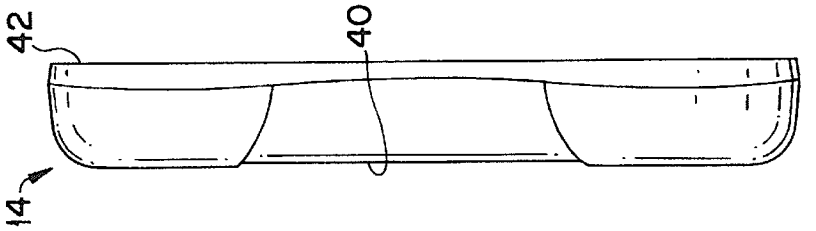

FIG. 4

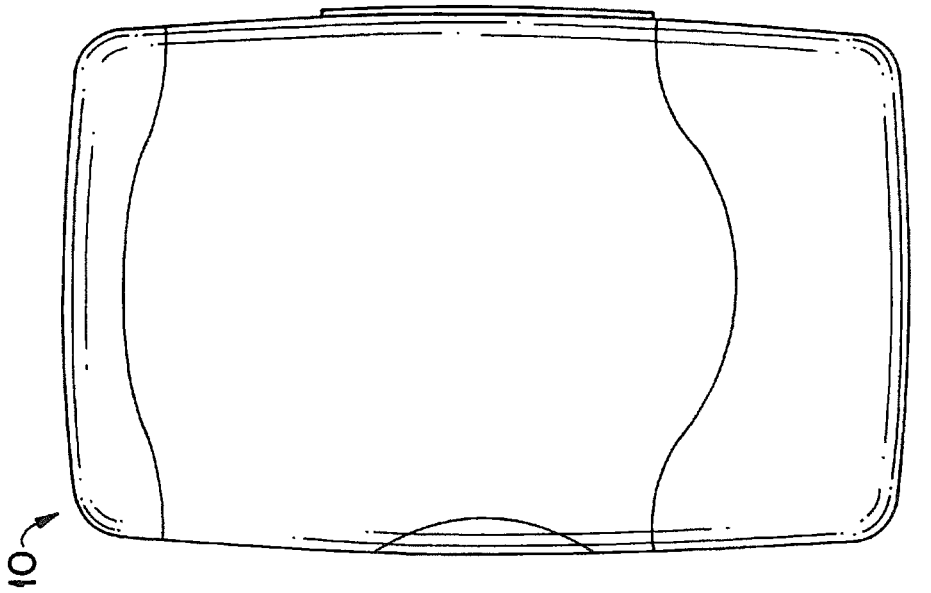

FIG. 8

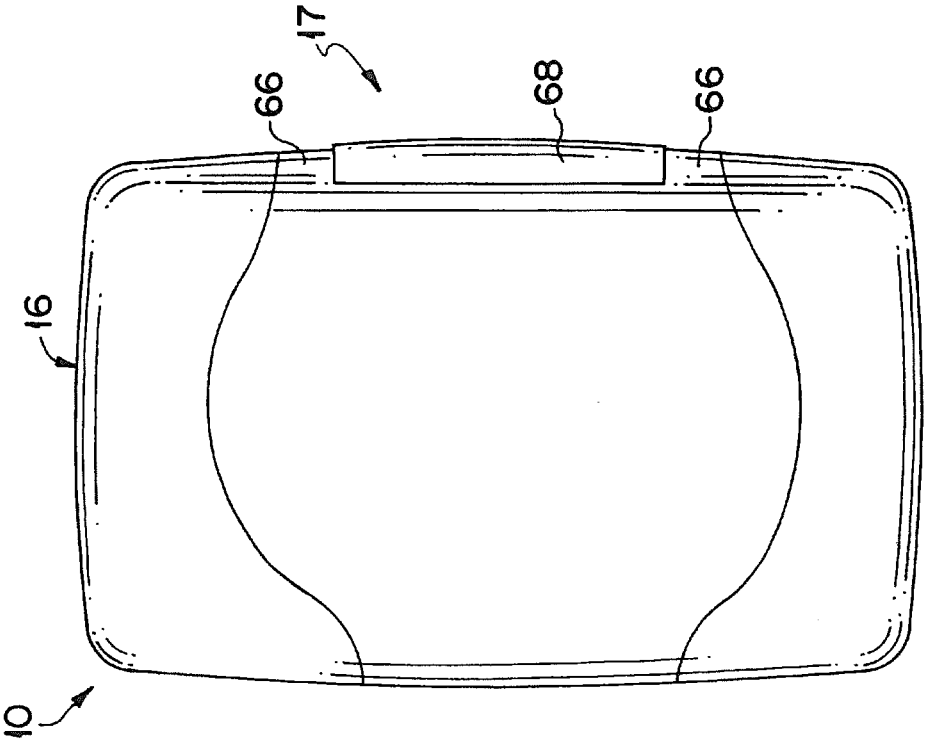

FIG. 7

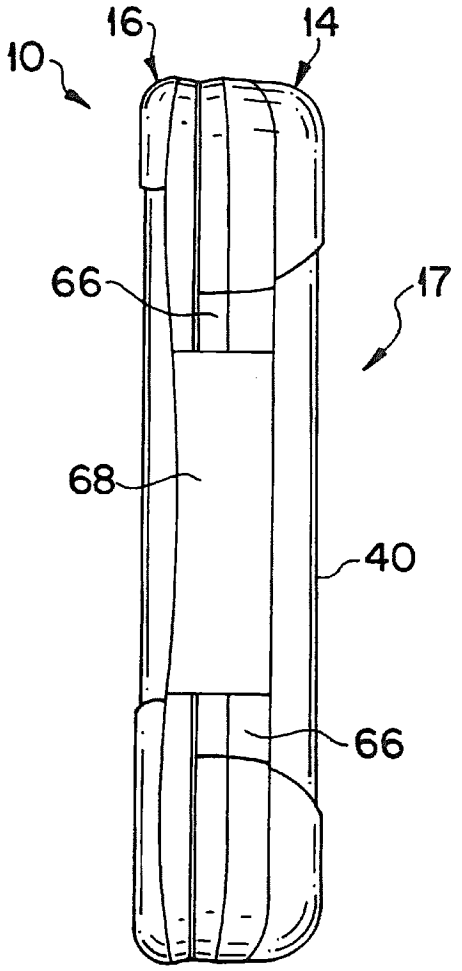

FIG. 9

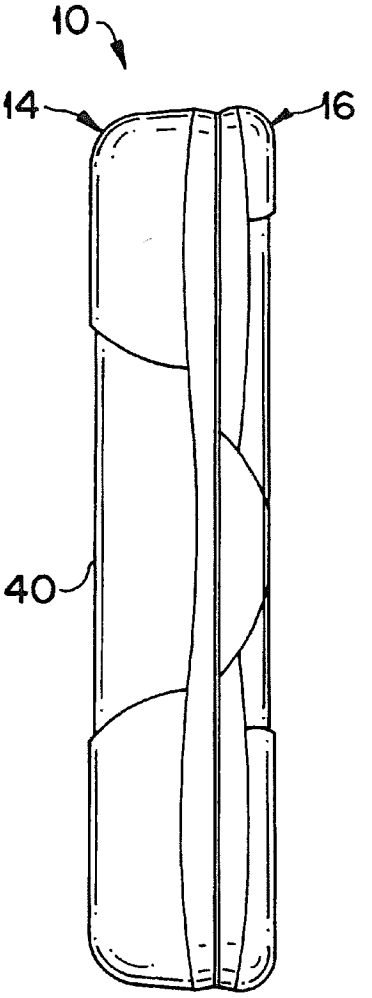

FIG. 10

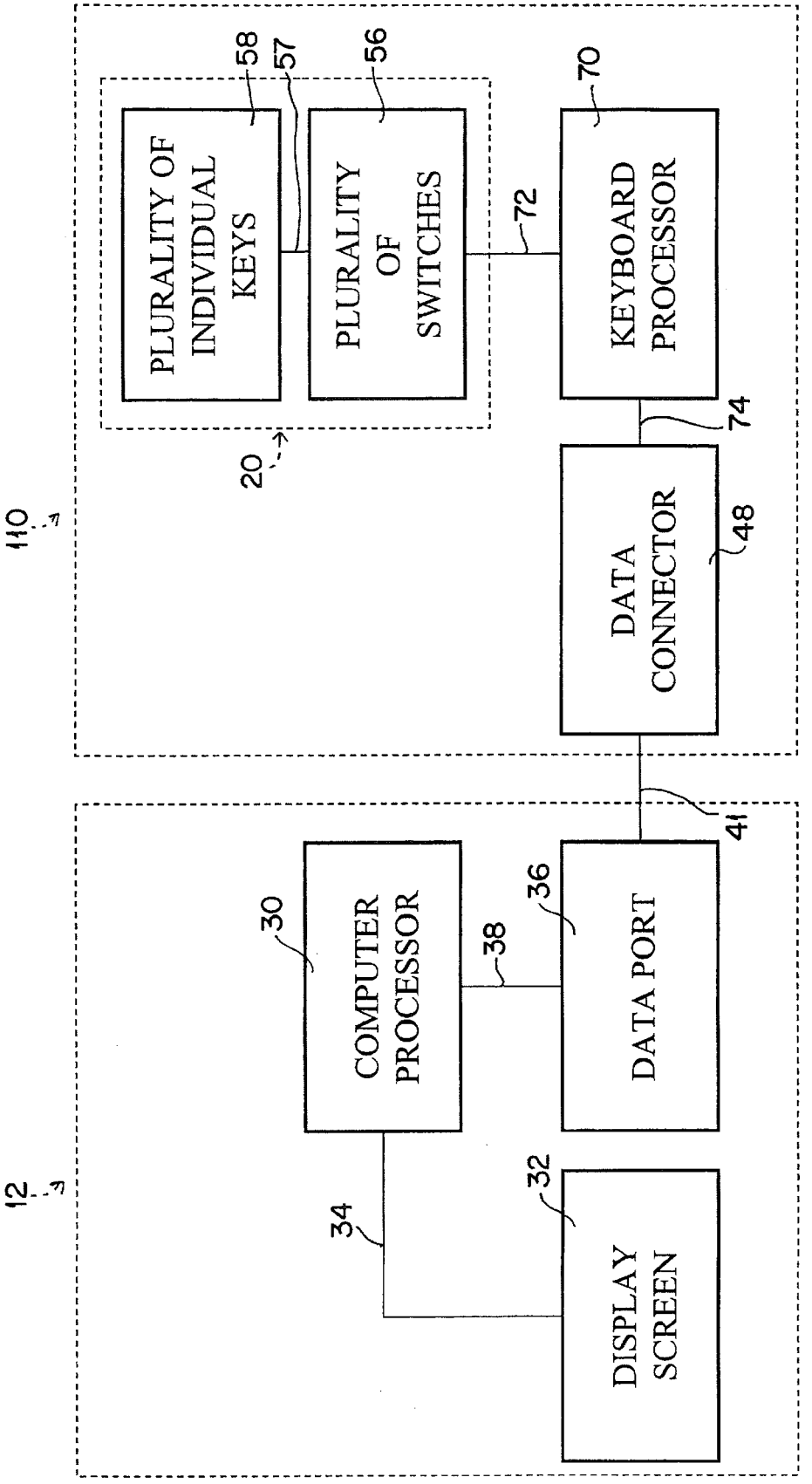
PLURALITY OF INDIVIDUAL KEYS
58
57
PLURALITY OF SWITCHES
56
20
72
KEYBOARD PROCESSOR
70
74
DATA CONNECTOR
48
110
41
COMPUTER PROCESSOR
30
38
DATA PORT
36
DISPLAY SCREEN
32
34
12

FIG. 11

PROTECTIVE CASE WITH A KEYBOARD FOR A HANDHELD COMPUTER

FIELD OF THE INVENTION

The present invention relates to a protective case for a handheld computer and to a handheld computer system including a handheld computer and a protective case for the same.

BACKGROUND OF THE INVENTION

Handheld computers, such as personal organizers, personal digital assistants (PDAs), smart or web-enabled telephones and other devices have grown in popularity partly due to their small size and easy portability. Advancements in technologies have made handheld computers increasingly more powerful, versatile, and affordable, and it is expected that their popularity will continue to increase.

Although handheld computers usually have an outer shell constructed from a rigid material to protect their internal components from damage, various protective cases have been developed to provide additional protection to the handheld computers. Typically, these cases enclose the outer shell and provide both additional protection against damage to the internal components and protection against marring or scratching of the outer shell.

One known method for data entry with handheld computers uses a stylus that the computer user taps on an "on-screen software keyboard." In this method, the display displays a simulated keyboard, simulated buttons, or other indicia on a pressure sensitive display screen, and the user contacts the appropriate location on the screen with the stylus to activate the key, button or indicia at that location.

In another known method, the user moves the stylus on the pressure-sensitive screen in contact therewith in a handwriting-type movement, which software in the computer recognizes and converts into data or commands. The software may be of the type that learns the user's own handwriting, or it may be of the type that recognizes predetermined writing strokes. An example of the latter is known as "Graffiti," which is commonly used for data entry in handheld computers using the Palm OS operating system. Because both of these methods use a blunt object, such as a stylus, for data entry, these computers are often referred to as "pen computers."

Keyboards or keyboard systems have been provided as an improvement over these known methods. One such keyboard system is described in U.S. Pat. No. 6,108,200 issued to Fullerton. This keyboard system is a separate unit that connects to a handheld computer and is placed on a flat surface, such as a table or desktop, to support the handheld computer at a viewing angle with respect to the flat surface to facilitate operation of the handheld computer. The keyboard system of the '200 patent also includes a cover that closes to protect the keyboard system when the keyboard system is not in use. After the user has completed using the handheld computer, he/she removes the computer from the keyboard, closes the keyboard cover to protect the keyboard and thereafter carries the keyboard and computer separately from one another.

PCT Application WO 00/10878 discloses a device that functions as both a keyboard and a case for a handheld computer. In one embodiment disclosed in the PCT Application, the handheld computer is disconnected from the keyboard and the keyboard is folded around the computer to protect the same. To use this embodiment, the user unfolds the keyboard from the computer and then connects the computer's data port to the connector provided on the upper edge of the keyboard. This is relatively inefficient for persons who want to use the keyboard for a quick entry of data because they must go through the hassle of unfolding the keyboard and connecting the computer each time they desire to make a keyboard style entry.

In another embodiment disclosed in the PCT Application, the keyboard remains connected to the keyboard even when the keyboard is folded over the computer for protection. However, in this embodiment, upon unfolding the keyboard, the handheld computer is oriented perpendicularly to the keyboard. That is, the handheld computer is oriented the characters displayed on the screen thereof are rotated 90 degrees relative to the alphabetic and numeric indicia on the keyboard. To solve this orientation problem, this embodiment is provided with a rotating mount that enables the handheld computer to be rotated to a proper orientation after unfolding the keyboard. This is an unsatisfactory arrangement because of the assembly and part costs associated with providing the rotating mount for the computer.

SUMMARY OF THE INVENTION

The present invention provides a protective case for a handheld computer that both provides protection to the handheld computer and also provides a keyboard for efficient data entry in a single unit. The handheld computer may be of any type and will typically include (i) an outer shell configured to be received in a user's hand (ii) a computer processor housed within the outer shell for processing. data, and (iii) a display screen faces outwardly from a front side of the outer shell. The display screen is electrically coupled to the computer processor to enable the processor to display information on the screen. A data port is electrically coupled to the computer processor and is adapted to be electrically coupled to a peripheral device to enable communication of data between the computer processor and the peripheral device.

The protective case includes a computer attachment portion and a computer cover portion. The computer attachment portion has a data connector adapted to be electrically coupled with the data port of the handheld computer. The computer attachment portion is configured to removably receive the handheld computer thereon in an operative position wherein the data port of the handheld computer is electrically coupled to the data connector.

The computer cover portion has a keyboard electrically coupled to the data connector on the computer attachment portion. The keyboard is adapted to transmit a data signal to the computer processor via the electrical coupling of the data connector and the data port. The keyboard enables the user to input data into the computer processor when the handheld computer is received on the computer attachment portion in the operative position thereof. In an exemplary, but non-limiting, embodiment, the data transmitter electrically couples to the data port of said handheld computer by an electro-conductive contact connection. In a further exemplary, but again non-limiting, embodiment, the data connector is fixedly positioned on the computer attachment portion such that upon positioning the handheld computer in the operative position the electro-conductive contact connection is established. The data connector may, as shown in the illustrated exemplary embodiment, comprise a plurality of metal prongs for establishing the electro-conductive contact connection.

The computer cover portion is movably connected to the computer attachment portion for movement between (a) a computer protecting position and (b) a computer operating position. In the computer protecting position, when the handheld computer is in the operative position on the computer attachment portion, the cover portion is positioned in an overlying relationship with respect to the front side of the handheld computer. In the computer operating position, when the handheld computer is in the operative position on the computer attachment portion, the cover portion is moved out of the overlying relationship to enable the user to view the display screen of the handheld computer and operate the keyboard to input data into the processor. The computer cover portion is sized and configured to cover at least the display screen on the front side of the handheld computer in the computer protecting position thereof to protect the front side of the computer.

The keyboard is arranged with respect to the computer attachment portion such that upon relative movement of the cover and attachment portions into the computer operating position, the indicia on the keyboard has the same general orientation from a user's perspective as characters displayed on the display screen of the handheld computer without requiring reorientation of the handheld computer relative to the keyboard to achieve the orientation.

Another aspect of the invention provides a handheld computer system including a handheld computer and a protective case. The handheld computer includes an outer shell configured to be received in a user's hand. A computer processor is housed within the outer shell for processing data and a display screen faces outwardly from a front side of the outer shell. The display screen is electrically coupled to the computer processor to enable the processor to display information on the screen. A data port is electrically coupled to the computer processor and is adapted to be electrically coupled to a peripheral device to enable communication of data between the computer processor and the peripheral device.

The protective case includes a computer attachment portion and a computer cover portion. The computer attachment portion has a data connector adapted to be electrically coupled with the data port of the handheld computer. The computer attachment portion is configured to removably receive the handheld computer thereon in an operative position wherein the data port of the handheld computer is electrically coupled to the data connector. In an exemplary, but non-limiting, embodiment, the data connector electrically couples to the data port of said handheld computer by an electro-conductive contact connection. In a further exemplary, but again non-limiting, embodiment, the data connector is fixedly positioned on the computer attachment portion such that upon positioning the handheld computer in the operative position the electro-conductive contact connection is established. The data connector and the data port may, as shown in the illustrated exemplary embodiment, comprise a plurality of metal prongs for establishing the electro-conductive contact connection.

The computer cover portion has a keyboard electrically coupled to the data connector on the computer attachment portion. The keyboard is adapted to transmit a data signal to the computer processor via the electrical coupling of the data connector and the data port. The keyboard enables the user to input data into the computer processor when the handheld computer is received on the computer attachment portion in the operative position thereof.

The computer cover portion is movably connected to the computer attachment portion for movement between (a) a computer protecting position and (b) a computer operating position. In the computer protecting position, when the handheld computer is in the operative position on the computer attachment portion, the cover portion is positioned in an overlying relationship with respect to the front side of the handheld computer. In the computer operating position, when the handheld computer is in the operative position on the computer attachment portion, the cover portion is moved out of the overlying relationship to enable the user to view the display screen of the handheld computer and operate the keyboard to input data into the processor. The computer cover portion is sized and configured to cover at least the display screen on the front side of the handheld computer in the computer protecting position thereof to protect the front side of the computer.

The keyboard is arranged with respect to the computer attachment portion such that upon relative movement of the cover and attachment portions into the computer operating position, the indicia on the keyboard has the same general orientation from a user's perspective as characters displayed on the display screen of the handheld computer without requiring reorientation of the handheld computer relative to the keyboard to achieve the orientation.

Yet another aspect of the invention provides a protective case for a handheld computer comprising: (a) an outer shell configured to be received in a user's hand, (b) a computer processor housed within the outer shell for processing data, (c) a display screen facing outwardly from a front side of the outer shell, the display screen being electrically coupled to the computer processor to enable the processor to display information on the screen, and (d) a data port coupled to the computer processor, the data port being adapted to communicate data between the computer processor and a peripheral device. The protective case of this aspect of the invention comprises a computer attachment portion having a data transmitter adapted to transfer data to the computer processor of the handheld computer through the data port of the handheld computer. The computer attachment portion is configured to removably receive the handheld computer thereon in an operative position with the data port of the handheld computer and the data transmitter enabling the data transmitter to transfer data to the computer processor through the data port. In an exemplary, but non-limiting, embodiment, the data transmitter electrically couples to the data port of said handheld computer by an electro-conductive contact connection. In a further exemplary, but again non-limiting, embodiment, the data transmitter is fixedly positioned on the computer attachment portion such that upon positioning the handheld computer in the operative position the electro-conductive contact connection is established. The data transmitter may, as shown in the illustrated exemplary embodiment, comprise a plurality of metal prongs for establishing the electro-conductive contact connection.

A computer cover portion has a keyboard with a plurality of keys having indicia representative of alphabetic and/or numeric characters associated therewith. The keyboard is adapted to transmit a data signal to the computer processor via the data transmitter and the data port to thereby enable the user to input data into the computer processor when the handheld computer is received on the computer attachment portion in the operative position thereof. The computer cover portion is movably connected to the computer attachment portion to enable the portions to be moved between (a) a computer protecting position wherein, when the handheld computer is in the operative position on the computer attachment portion, the cover portion is positioned in an

overlying relationship with respect to the front side of the handheld computer and (b) a computer operating position wherein, when the handheld computer is in the operative position on the computer attachment portion, the cover portion is moved out of the overlying relationship to enable the user to view the display screen of the handheld computer and operate the keyboard to input data into the processor. The computer cover portion being sized and configured to cover at least the display screen on the front side of the handheld computer in the computer protecting position thereof to protect the display screen of the computer. The keyboard is arranged with respect to the computer attachment portion such that upon relative movement of the cover and attachment portions into the computer operating position the indicia on the keyboard has the same general orientation from a user's perspective as characters displayed on the display screen of the handheld computer without requiring reorientation of the handheld computer relative to the keyboard to achieve the orientation.

Yet another aspect of the invention comprises a handheld computer system comprising a handheld computer and a protective case. The handheld computer comprises (a) an outer shell configured to be received in a user's hand, (b) a computer processor housed within the outer shell for processing data, (c) a display screen facing outwardly from a front side of the outer shell, the display screen being electrically coupled to the processor to enable the processor to display information on the screen, and (d) a data port electrically coupled to the computer processor, the data port being adapted to communicate data between the computer processor and a peripheral device.

The protective case comprises a computer attachment portion having a data transmitter adapted to transfer data to the computer processor of the handheld computer through the data port of the handheld computer, the computer attachment portion having the handheld computer removably received thereon in an operative position with the data port of the handheld computer and the data transmitter enabling the data transmitter to transfer data to the computer processor through the data port. In an exemplary, but non-limiting, embodiment, the data transmitter electrically couples to the data port of said handheld computer by an electro-conductive contact connection. In a further exemplary, but again non-limiting, embodiment, the data transmitter is fixedly positioned on the computer attachment portion such that upon positioning the handheld computer in the operative position the electro-conductive contact connection is established. The data transmitter and the data port may, as shown in the illustrated exemplary embodiment, comprise a plurality of metal prongs for establishing the electro-conductive contact connection.

The protective case also comprises a computer cover portion having a keyboard with a plurality of keys having indicia representative of alphabetic and/or numeric characters associated therewith, the keyboard being adapted to transmit a data signal to the computer processor via the data transmitter and the data port to thereby enable the user to input data into the computer processor. The computer cover portion is movably connected to the computer attachment portion to enable the portions to be moved between (a) a computer protecting position wherein the cover portion is positioned in an overlying relationship with respect to the front side of the handheld computer and (b) a computer operating position wherein the cover portion is moved out of the overlying relationship to enable the user to view the display screen of the handheld computer and operate the keyboard to input data into the processor, the computer cover portion being sized and configured to cover at least the display screen on the front side of the handheld computer in the computer protecting position thereof to protect the display screen of the computer. The keyboard is arranged with respect to the computer attachment portion such that upon relative movement of the cover and attachment portions into the computer operating position the indicia on the keyboard has the same general orientation from a user's perspective as characters displayed on the display screen of the handheld computer without requiring reorientation of the handheld computer relative to the keyboard to achieve the orientation.

Other objects, features, and advantages of the present invention will become apparent from the following detailed description, the accompanying drawings, and the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention is further described in the detailed description which follows, by reference to the noted drawings by way of non-limiting exemplary embodiments, in which like reference numerals represent similar parts throughout the several views of the drawings, and wherein:

FIG. **1** is a front view of a protective case for a handheld computer in accordance with the exemplary embodiment of the invention, the protective case having a computer attachment portion and a computer cover portion movably connected so as to be in a computer operating position thereof and a handheld computer being received in an operative position on the computer attachment portion of the protective case;

FIG. **2** is a schematic diagram of the protective case for a handheld computer shown in FIG. **1**;

FIG. **3** is a schematic diagram showing the keyboard of FIG. **2** in greater detail;

FIG. **4** is a left side elevational view of the protective case for a handheld computer shown in FIG. **1**;

FIG. **5** is a top view of the protective case for a handheld computer shown in FIG. **1**;

FIG. **6** is a right side elevational view of the protective case for a handheld computer shown in FIG. **1**;

FIG. **7** is a front elevational view of the protective case for a handheld computer shown in FIG. **1** with the handheld computer being positioned in an operative position on the computer attachment portion of the protective case and the computer cover portion being moved to a computer protecting position wherein it is positioned in an overlying relationship with respect to the front side of the handheld computer;

FIG. **8** is a rear elevational view of the protective case for a handheld computer shown in FIG. **1** with the handheld computer being positioned in an operative position on the computer attachment portion of the protective case and the computer cover portion being moved to a computer protecting position wherein it is positioned in an overlying relationship with respect to the front side of the handheld computer;

FIG. **9** is a left side elevational view of the protective case for a handheld computer shown in FIG. **8**;

FIG. **10** is a right side elevational view of the protective case for a handheld computer shown in FIG. **8**; and

FIG. **11** is a schematic diagram of an alternative protective case for a handheld computer wherein the alternative protective case includes a keyboard processor.

DETAILED DESCRIPTION OF THE ILLUSTRATED EMBODIMENTS

FIGS. **1** and **4**–**10** show a protective case, generally indicated at **10**, for a handheld computer, generally indicated

at **12**. The protective case **10** includes a computer attachment portion **14** and a computer cover portion **16** movably connected to one another for movement between a computer protecting position and a computer operating position. In FIG. **1**, the cover portion **16** of the protective case **10** is in its computer operating position and the handheld computer **12** is in an operative position thereof in the computer attachment portion **14**. When the handheld computer **12** is in the operative position thereof, the protective case **10** and the handheld computer **12** together constitute a handheld computer system, generally indicated at **18**. The protective case **10** includes a keyboard **20** on its computer cover portion **16**, which will be described in greater detail below.

In the illustrated embodiment, the computer attachment portion **14** may be pivotally connected to the computer cover portion **16** by hinge structure **17**. The attachment and cover portions **14**, **16** pivot about a pivot axis **21** located between respective adjacent peripheral edges **22**, **24** thereof. However, the attachment and cover portions **14**, **16** may be movably connected to one another by any suitable connecting arrangement, such as, for example, a living hinge or a dual-pivot hinge. Likewise, the connection between the attachment and cover portions **14**, **16** may be between the top edge of the cover portion **16** and the bottom edge of the attachment portion **14**.

In the computer protecting position, when the handheld computer **12** is in its operative position on the computer attachment portion **14**, the cover portion **16** is positioned in an overlying relationship with respect to a front side **26** of the handheld computer **12**, as best shown in FIGS. **7** and **8**. In the computer operating position, the computer cover portion **16** is moved out of the overlying relationship with respect to the front side **26** of the handheld computer **12** into a side-by-side relationship to enable the user to view the computer's display screen and operate the keyboard **20**, as best shown in FIG. **1**.

Although the present invention is primarily concerned with the protective case **10**, a general description of the handheld computer **12** with which the case **10** is designed to be used is believed to be worthwhile to facilitate understanding the construction and operation of the case **10** of the present invention.

The handheld computer **12** comprises an outer shell **28**, which is made from a rigid material, such as plastic, metal or a combination thereof. In the illustrated embodiment, the outer shell **28** has a generally rectangular configuration. However, the outer shell **28** may have any configuration, such as being ergonomically designed to comfortably fit in a user's hand. The handheld computer **12** illustrated in the figures is an IBM Workpad, but the case **10** of the invention may be modified for use with any type of handheld computer, such those commercially available from, for example, Palm (3 Com), Handspring, Casio, or any other manufacturers of these types of devices.

As shown schematically in FIG. **2**, a computer processor **30** is housed within the outer shell **28** for protection. The computer processor **30** is adapted for receiving signals from its on-board input system and/or peripheral devices, such as a keyboard or personal computer docking cradle, coupled to its data port **36** and processing those data signals. In the present application, the term processor is used to denote the general processing system for operating the computer **12** and contemplates that this system may be provided by a single processor responsible for all computer functions, or a series of interconnected processors each dedicated to discrete functions of the computer **12**.

A display screen **32** is electrically coupled, as schematically represented at **34**, to the computer processor **30** to enable the computer processor **30** to display information on the screen **32**. The display screen **32** is disposed on the front side **26** of the outer shell **28** so as to face outwardly therefrom through an opening in the shell **28**. A data port **36** is electrically coupled, as schematically represented at **38**, to the processor **30**. The data port **36** is adapted to be electrically coupled to a peripheral device, such as a keyboard, or a personal computer docking cradle, to enable communication of data between the computer processor **30** and the peripheral device.

In the illustrated handheld computer **12**, the display screen **32** is an LCD screen of the pressure-sensitive type that enables the user to input data or commands into the processor **30** by contacting the screen **32** with a blunt object, such as a stylus or finger, in a handwriting-type manner as described in the above background section to activate a series of pressure-sensitive elements embedded within the screen **32**. A series of computer executable instructions converts the handwriting type movements into data for processing and/or storage. The input system is preferably supplemented with a series of computer executable instructions executable by the computer processor **30** that display simulated input elements on the display screen **32**. Such simulated input elements may include menu elements of a simulated pull-down menu, a simulated keyboard having a plurality of simulated keys each associated with a certain portion of the screen, or icons that invoke predetermined macro function. The input system is configured to determine when a user invokes a simulated input element, such as an icon or menu element displayed on the display screen **32** or the "key" of a simulated keyboard displayed on the screen **32**. For example, in "pen computers", the user may contact the screen with a stylus so as to activate a input element, such as an icon displayed on the screen **32**, and the processor **30** as directed by the computer executable instructions determines that element has been invoked by sensing actuation of the pressure-sensitive elements at the associated location on the screen **32**. The processor then executes a command or data input corresponding to the invoked simulated input element.

Alternatively, the input system of the computer could be operated by maneuvering a cursor via a mouse, trackball or tactile control pad on the outer shell **28** and actuating a button to invoke a simulated input element when the cursor is positioned on that input element. The present invention is not particularly concerned with the manner in which the input system of the computer **12** functions and the foregoing examples of achieving such input have been provided solely as illustrative guides to familiarize the reader with the general types of input systems that can be used in such handheld computers.

In another alternative, the case **10** could be used with a computer **12** that is designed without an input system and could be of the type that information is input into via the keyboard **20** or by connecting with a PC which uploads data to the handheld computer **12** (commonly referred to as synchronizing). Although one could not input information into this type of computer **12**, the computer **12** could still function to alert the person carrying the computer **12** of upcoming appointments or tasks by emitting an audible signal and displaying information concerning the appointment or task on its display screen **32**, a typical function found in many handheld computers **12**.

The handheld computer **12** includes non-volatile memory for storing executable programs and data which is to be

retrieved at later times, but may include other types of sufficient memory, such as RAM, as well.

The computer attachment portion **14** is sized and configured to completely cover a rear side (not shown) of the handheld computer **12** when the handheld computer **12** is received thereon in the operative position thereof. Similarly, the computer cover portion **16** is sized and configured to completely cover the front side **26** of the handheld computer **12** when the cover portion **16** is received thereon in the computer protecting position thereof to protect the front side **26** of the handheld computer **12** against marring or scratching. Preferably, the cover portion **16** completely covers the front side of the computer **12**. However, absolutely complete coverage is not necessary, but it should cover at least the screen **32**, which is the portion of the computer **12** most prone to damage.

Alternatively, the computer attachment portion **14** could have an open frame that does not completely cover the rear face of the computer **12** and, instead, simply serves as a frame for supporting the computer **12** thereon in its operative position. In this alternative construction, the computer attachment portion **16** does not function to protect the rear side of the computer **12**, which is entirely outer shell and thus protected anyway. Preferably, however, the attachment portion **14** does cover the rear side of the computer **12** so as to provide enhanced protection.

In the illustrated embodiment, the computer attachment portion **14** and the computer cover portion **16** and their respective outer shells have generally rectangular configurations that correspond with the configuration of the outer shell **28** of the handheld computer **12**. Alternatively, the computer attachment portion **14** and the computer cover portion **16** could have configurations that differ from the shape of the computer **12**.

The outer shells of the computer attachment portion **14** and the computer cover portion **16** are each formed from a substantially rigid material, such as plastic, metal, or a combination thereof. Alternatively, the outer shells of the attachment portion **14** and the computer cover portion **16** could be made from a vinyl, leather, or fabric and lined with padding to provide protection to the computer **12**.

The outer shell of the computer attachment portion **14** includes a rear wall **40**, which completely covers the rear side of the handheld computer **12** in the operative position thereof. A pair of side walls **42** extends forwardly from the rear wall **40** to define a computer receiving space along the rear wall **40** and engages side edges of the outer shell **28** when the handheld computer **12** is positioned in the operative position thereof. The size of the computer attachment portion's outer shell varies depending upon the handheld computer's size, thus the size of the space defined by the walls **42** may be varied according to the handheld computer's shape and size as well.

A pair of retaining portions **44** extend downwardly from a top wall extending from the rear wall **40** to assist in releasably retaining the handheld computer **12** in the operative position on the computer attachment portion **14**. Specifically, as shown in FIG. **1**, the top edge of the computer **12** is received underneath the retaining portions **44** and the retaining portions **44** engage the front side **26** of the outer shell **28**. When the computer **12** is in its operative position, its data port **36** is electrically coupled to a data connector **48**, schematically represented at **41**, which is carried on the computer attachment portion **14**.

The data connector **48** is disposed within a data connector housing portion **49** with a portion, such as a plurality of metal prongs or other electrical coupling members, protruding slightly upwardly therefrom for coupling to the data port **36** of the computer **12**. The type of arrangement used for the connector **48** will be dictated by the type of computer **12** for which the case **10** is designed. Specifically, the arrangement for the connector will be dictated by the construction of the data port **36** on the computer **12**. For example, the data connector **48** may be configured to cooperate with different handheld computers, such as a Handspring Visor, a Palm III, a Palm V, a IBM Workpad, or any other handheld computer.

A locking mechanism **50** is provided within the data connector housing portion **49** and functions to secure the handheld computer **12** in its operative position within the outer shell of the computer attachment portion **14**. In the illustrated embodiment, the data connector housing portion **49** slides downwardly (as viewed in the Figures) to enable the top edge of the computer **12** to be slid underneath the retaining tabs **44** and then is slid upwardly to engage the lower edge of the computer **12**, which in turn electrically couples the data connector **48** to the data port **36**. The locking mechanism **50** is provided by a slide switch **52**, which is receivable in an opening in the adjacent side wall of the computer attachment portion **14**. Specifically, the lock switch **52** moves to a locked position wherein it is received in the opening to lock the data connector housing portion **49** in engagement with the bottom edge of the handheld computer **12** and retain the computer **12** in its operative position in cooperation with the retaining tabs **44**. Movement of the switch **52** to its unlocking position withdraws the switch **52** from its opening to free the data connector housing portion **49** for downward movement away from the bottom edge of the computer **12**. This allows the computer **12** to be manually removed from the attachment portion **14**.

In general, the retaining tabs **44**, the data connector housing portion and the locking mechanism **50** function together as a computer retainer to retain the handheld computer **12** on the computer attachment portion **14** of the protective case **10**. However, the computer retainer could have any construction suitable for releasably retaining the handheld computer in its operative position on the computer attachment portion **14**. For example, the retainer could be provided by one or more releasable Velcro®, buckled or buttoned straps, one or more claw latches that snappingly engage the computer's outer shell, one or more cams within a fixed data housing connector portion that are forced upwardly by switch movement against the bottom edge of the computer **12** and work in cooperation with tabs **44**, or a magnetic lining on the rear wall **40** for magnetically attracting metal in the computer's outer shell. Likewise, the computer attachment portion **14** could be segmented into two separable sections with "pockets" for retaining the peripheral edges of the computer's outer shell. In this arrangement, the user places one end or side of the computer into the pocket of one section and then couples the other section to the first section with the pocket of the other section receiving the opposite end or side of the computer's outer shell. These pockets would function as the computer retainer to retain the computer **12** on the attachment portion **14**. To remove the computer **12**, the user simply separates the two sections of the attachment portion and removes the computer **12** from the pocket.

The computer cover portion **16** has an outer shell including an outer wall **47** that defines an interior space (not shown) in which the keyboard **20** is fixedly mounted. The keyboard **20** is secured, for example, with adhesive or other bonding material, within the interior space defined by the outer wall **47**. The keyboard **20** is electrically coupled to the

data connector **48** by an electric cable, wire or ribbon connector **54** that extends through the hinge structure **17**. Alternatively, this electrical connection could simply extend across the portions **14**, **16** without passing through the hinge **17**. However, passing the electrical connection through the hinge **17** is preferred for aesthetic purposes.

The keyboard **20** includes a plurality of switches **56** and a plurality of individual keys **58** (FIG. **3**). Each switch **56** is electrically coupled to the data connector **48** via the wire **54** and each individual key **58** is positioned adjacent an associated switch **56**. Movement of the keys **58** moves the associated switch **56**, which signals the computer processor **30** via the coupling of the data port **36** and the data connector **48** that one or more keys **58** have been depressed. This relationship is schematically represented at **57** in FIG. **3**.

In the illustrated embodiment, the keyboard **20** does not have its own power source and instead draws power from the handheld computer **12** through the electrical coupling between the data port **36** and the data connector **48**. Alternatively, the keyboard **20** may include an on-board power supply, such as non-rechargeable or rechargeable batteries or an electrical plug connectable to an AC or DC power source.

The keys in the illustrated keyboard include a plurality of keys corresponding to the letters of the alphabet and a plurality of keys corresponding to the numbers 0–9 (marked by appropriate indicia for identifying the key). Other keys corresponding to conventional symbols are also provided along with appropriate indicia. The keyboard also has a number of keys dedicated to predetermined macro functions that are typically used in word processing. These macro keys include cut, paste, copy, undo, among others. These macro keys, in cooperation with the keyboard driver program in the computer or in the keyboard processor as described below, invoke predetermined commands that are often utilized by the user when operating the computer **12**. The Backlight key commands the computer to backlight the screen **32**, if the computer **12** has such capability. The particular layout and types of keys are not of critical importance to the inventions and other types and layouts may be used. However, it should be noted that the arrangement of the keyboard **20** with respect to the with respect to the computer attachment portion is such that upon relative movement of the cover and attachment portions into the computer operating position, the indicia on the keyboard **20** has the same general orientation from a user's perspective as characters displayed on the display screen of the handheld computer without requiring reorientation of the handheld computer relative to the keyboard to achieve the orientation, as is the case in the PCT Application mentioned above. This enables the user to easily the use the keyboard **20** simply by moving the portions **12** and **14** apart to their computer operating position.

The keyboard **20** may have any construction suitable for translating manual keystrokes applied to the keys thereof into corresponding signals usable by the computer processor **30**. The exemplary embodiment of the keyboard is provided for illustrative purposes only and is not intended to be limiting in any manner. For example, the keyboard **20** could be of the type that has a pressure-sensitive touch pad segmented into a number of keys, instead of having a number of individual switch actuated keys. The pressure-sensitive pad would create and transmit a signal indicating that a certain area of the pad corresponding to an associated key had been pressed. Other types of keyboards can be readily envisioned.

The computer attachment portion **14** and the computer cover portion **16** provide cooperating structures in the form of latch portions **60**, **62** that cooperate with one another to releasably retain the computer cover portion **16** in the computer protecting position thereof. For example, the latch portion **60** in the illustrated embodiment is a latch hook provided on either one of the computer attachment portion **14** or the computer cover portion **16**. The latch portion **62** in the illustrated embodiment is a hook receiving member with a hook receiving opening **64** provided on the other of the computer attachment portion **14** or the computer cover portion **16**.

The latch hook **60** extends from the outer wall **47** of the computer cover portion **16** while the hook receiving member **62** extends from the computer engaging wall **42** of the computer attachment portion **14**. The latch hook **60** and the hook receiving member **62** are configured to engage one another in a releasably interlocked relation, i.e., the latch hook **62** being received in the hook receiving opening **64**, to releasably retain the computer cover portion **16** in the computer protecting position thereof. Similarly, the latch hook **60** and the hook receiving member **62** may be disengaged (i.e., the latch hook **60** may be manually removed from the hook receiving opening **64**) to release the computer cover portion **16** for movement to the computer operating position thereof from the computer protecting position thereof relative to the computer attachment portion **14**.

As noted above, the protecting case **10** has the hinge structure **17** which permits the attachment and cover portions **14**,**16** to pivot with respect to one another about the axis **21**. As shown in FIGS. **1**, **7**, and **9**, each hinge structure **17** includes a cylindrical shaft member (not shown) extending between a pair of associated pivotal journaling members **66**, which extend from the peripheral edge **22** of the computer attachment portion **14**. An elongated pivotal journaling member **68** extends from the peripheral edge **24** of the computer cover portion **16**. The shaft member extends through the elongated pivotal journaling member **68** to be received between the pair of associated pivotal journaling members **66** in a journaling opening (not shown) formed in the associated journaling members **66**. Thus, the cylindrical shaft member forms the pivot axis **21**. The shaft member is positioned relative to the peripheral edges **22**, **24** of the attachment and cover portions **14**, **16**, respectively, so as to allow the protective case **10** to pivot about the pivot axis **21** without obstruction.

Alternatively, in a configuration not shown, the hinge structure could consist of a series of aligned journaling members extending from the attachment portion **14** and or the cover portion **16**. A pin-type axle member fixed on the other portion passes through the journaling members and is retained therein by suitable securing means, such as a snap-fit received relation. Generally, any suitable arrangement may be used to movably connect the attachment and cover portions together.

The size and configuration of the illustrated embodiment is advantageous because the case **10** can be opened to provide access to the keyboard **20** and viewing of the screen **32** while holding the case **10** in one hand, while the other hand is used for operation of the keyboard **20**. Because the hinges are free pivoting in the illustrated embodiment, the user should support both sides of the case **10** in his/her hand. Also, the case can be laid down flat on a support surface, such as a desktop, during usage thereof.

In the embodiment of FIGS. **1**–**10**, a keyboard driver software program is provided for loading into the non-volatile memory of the computer **12**. The keyboard driver program comprises a series of computer executable instruc-

tions that are executable by the computer processor **30** to interpret the data signals generated by the keyboard **20** based on the keystrokes applied thereto and converts those signals into instructions which are recognizable and executable by the computer processor **30** and its operating system. For example, in computer having Palm OS as its operating system, the keyboard driver software interprets data signals transmitted by the keyboard **20** and converts them into instructions which Palm OS recognizes and can cause the processor **30** to execute. Likewise, the keyboard driver program could be adapted to perform the same function in a computer using Microsoft Windows CE as its operating system.

FIG. **11** schematically illustrates a protective case **110**, which includes a keyboard processor **70**. The protective case **110** is the same in construction and operation as the protective case **10**, except for the keyboard processor **70** and its electrical couplings, and the above description with respect to the protective case **10** will suffice for both. Similar elements of each protective case **10**, **110** have identical reference numerals.

As illustrated in FIG. **11**, the keyboard processor **70** is electrically coupled, as schematically represented at **72**, to the plurality of switches **56**. The keyboard processor **70** is adapted to process the keystrokes applied to the keyboard **20** by the user and transmit a data signal based on the keystrokes through wires connecting the data connector **48**, the data port **36** and the computer processor **30**. An electric cable, wire or ribbon cable **74** couples the keyboard processor **70** through the hinge structure **17** to the data connector **36**.

The keyboard processor **70** has the appropriate keyboard driver program embedded therein for the type of computer for which the case **10** is designed. As a result, there is no need to upload a separate keyboard driver program to the computer **30**.

OPERATION

The operation of the protective case **10** of the handheld computer system **18** will now be described.

The user connects the handheld computer **12** to the protective case **10**. To effect this connection, the data connector housing portion **49** is slid downwardly, the upper end of the handheld computer **12** is positioned beneath the pair of retaining portions **44**, and then the computer **12** is pivoted downwardly into its operative position in the computer attachment portion **14**. Then the user slides the data connector housing portion **49** upwardly into engagement with the bottom edge of the computer **12**, which in turn engages the data port **36** of the handheld computer **12** with the data connector **48** to affect the electric coupling therebetween. The user then moves the locking switch **52** into its locking position to lock data connector housing portion **49** in place and retain the computer **12** in the operative position.

FIGS. **7–10** show the computer cover portion **16** in its computer protecting position, wherein the outer shells of the attachment and cover portions **14**, **16** cooperate to completely enclose the handheld computer **12**. In this position, the latch hook **60** is received in the hook receiving opening **64** to releasably retain the computer cover portion **16** in the computer protecting position thereof.

To view the display screen **32** or operate the keyboard **20**, a user disengages the hook **60** from the hook receiving opening **64** and pivots the attachment and cover portions **14**, **16** out of the overlying relationship with one another (to the computer operating position shown in FIG. **1**). The latch hook **60** and the hook receiving member **62** are configured to disengage so that the latch hook **62** may be removed from the hook receiving opening **64** using a predetermined amount of manual force applied by the user's finger or thumb. When the latch hook **60** and the hook receiving member **62** are disengaged from one another, the computer cover portion **16** may be moved from its computer protecting position, such as, for example, about the pivot axis **21** to its computer operating position.

Once the computer cover portion **16** moves into its computer operating position, the display screen **32** and/or keyboard **20** become fully accessible to the user. For example, when a user manually depresses one of the keys **58** of the keyboard **20**, the switch **56** associated with the depressed key **58** signals the computer processor **30** that the key **58** associated therewith has been depressed. The keyboard **20** then transmits data signals based on keystrokes applied to the individual keys **58** by a user to the computer processor **30** via the coupling between the data port **36** and the data connector **48**. That way, the user may input data into the computer processor **30** using the keyboard **20** when the handheld computer **12** is in its operative position.

After use of the data screen **32** and/or keyboard **20**, the user can manually pivot the cover portion **16** from its computer operating position to its computer covering position about the pivot axis **21**. To retain the cover portion **16** in its computer covering position, the user may apply a manual force to the protective case **10** so as to move the latch hook **60** into engagement with the hook receiving member **62**. The latch hook **60** may be received within the hook receiving opening **64**, for example, by a snap fit, so that the computer cover portion **16** is retained in its computer protecting position.

While the principles of the invention have been made clear in the illustrative embodiments set forth above, it will be apparent to those skilled in the art that various modifications may be made to the structure, arrangement, proportion, elements, materials, and components used in the practice of the invention.

What is claimed:

1. A protective case for a handheld computer comprising: (a) an outer shell configured to be received in a user's hand, (b) a computer processor housed within said outer shell for processing data, (c) a display screen facing outwardly from a front side of said outer shell, said display screen being electrically coupled to said computer processor to enable said processor to display information on said screen, and (d) a data port coupled to said computer processor, said data port being adapted to be electrically coupled to a peripheral device to enable communication of data between said computer processor and the peripheral device, said protective case comprising:

a computer attachment portion having a data connector adapted to be electrically coupled with the data port of said handheld computer, said computer attachment portion being configured to removably receive said handheld computer thereon in an operative position wherein said data port of said handheld computer is electrically coupled to said data connector; and

a computer cover portion having a keyboard with a plurality of keys having indicia representative of alphabetic and/or numeric characters associated therewith, said keyboard being electrically coupled to said data connector on said computer attachment portion and being adapted to transmit a data signal to said computer processor via the electrical coupling of said data con-

nector and said data port to thereby enable the user to input data into said computer processor when said handheld computer is received on said computer attachment portion in said operative position thereof;

said computer cover portion being movably connected to said computer attachment portion to enable said portions to be moved between (a) a computer protecting position wherein, when said handheld computer is in said operative position on said computer attachment portion, said cover portion is positioned in an overlying relationship with respect to the front side of the handheld computer and (b) a computer operating position wherein, when said handheld computer is in said operative position on said computer attachment portion, said cover portion is moved out of said overlying relationship to enable said user to view the display screen of said handheld computer and operate said keyboard to input data into said processor, said computer cover portion being sized and configured to cover at least the display screen on the front side of said handheld computer in said computer protecting position thereof to protect the display screen of said computer;

said keyboard being arranged with respect to said computer attachment portion such that upon relative movement of said cover and attachment portions into said computer operating position the indicia on said keyboard has the same general orientation from a user's perspective as characters displayed on the display screen of said handheld computer without requiring reorientation of said handheld computer relative to said keyboard to achieve said orientation.

2. A protective case according to claim 1, wherein said computer attachment portion has a computer retainer that releasably retains said handheld computer in said operative position on said computer attachment portion.

3. A protective case according to claim 2, wherein said computer cover portion is sized and configured to completely cover the front side of said handheld computer in said computer protecting position thereof to protect the front side of said computer.

4. A protective case according to claim 3, wherein said computer attachment portion is pivotally connected to said cover portion.

5. A protective case according to claim 4, wherein said computer attachment portion is sized and configured to completely covers a rear side of said handheld computer in said operative position thereof.

6. A protective case according to claim 5, wherein said computer attachment portion and said computer cover portion each have an outer shell, said outer shells being configured such that, when said handheld computer is in said operative position thereof and said computer cover portion is in said computer protecting position thereof, said outer shells cooperate to completely enclose said handheld computer.

7. A protective case according to claim 6, wherein the outer shells of said computer attachment portion and said computer cover portion are each formed from a substantially rigid material.

8. A protective case according to claim 7, wherein substantially rigid material is plastic.

9. A protective case according to claim 7, wherein said computer attachment portion and said computer cover portion provide cooperating structures that cooperate with one another to releasably retain said computer cover portion in said computer protecting position thereof.

10. A protective case according to claim 9, wherein said cooperating structures include a latch portion provided on one of said cover and attachment portions and a latch portion provided on the other of said cover and attachment portions, said latch portions being engageable with one another in a releasably interlocked relation to releasably retain said computer cover portion in said computer protecting position thereof, said latch portion being disengageable to release said computer cover portion for movement from said computer protecting position thereof.

11. A protective case according to claim 10, wherein one of said latch portions is a latch hook and wherein the other of said latch portions is a hook receiving member with a hook receiving opening, said hook being receivable in said hook receiving opening to provide said interlocked relation and releasably retain said computer cover portion in said computer protecting position thereof, said hook being removable from said hook receiving opening to release said computer cover portion for movement from said computer protecting position thereof.

12. A protective case according to claim 6, wherein said computer cover portion and said computer attachment portion are each made from a flexible material.

13. A protective case according to claim 1, further comprising:

a keyboard processor electrically coupled to said keyboard and said keyboard processor being adapted to process the keystrokes applied to said keyboard by the user and transmit said data signal based on said keystrokes to said computer processor via the electrical coupling of said data connector and said data port to thereby enable the user to input data into said computer processor when said handheld computer is received on said computer attachment portion in said operative position thereof.

14. A protective case according to claim 13, wherein said keyboard comprises a plurality of switches each electrically coupled to said keyboard processor and a plurality of individual keys each positioned adjacent an associated one of said switches such that manually depressing one of said keys moves the switch associated with the depressed key, each of said switches being adapted such that movement thereof signals said keyboard processor that the key associated therewith has been depressed.

15. A protective case according to claim 1, wherein said data connector electrically couples to the data port of said handheld computer by an electro-conductive contact connection.

16. A protective case according to claim 15, wherein said data connector is fixedly positioned on said computer attachment portion such that upon positioning said handheld computer in said operative position said electro-conductive contact connection is established.

17. A protective case according to claim 16, wherein said data connector comprises a plurality of metal prongs for establishing said electro-conductive contact connection.

18. A handheld computer system comprising:

(A) a handheld computer comprising:

an outer shell configured to be received in a user's hand,

a computer processor housed within said outer shell for processing data,

a display screen facing outwardly from a front side of said outer shell, said display screen being electrically coupled to said processor to enable said processor to display information on said screen, and

a data port electrically coupled to said computer processor, said data port being adapted to be electrically coupled to a peripheral device to enable

communication of data between said computer processor and the peripheral device,

(B) a protective case comprising:

a computer attachment portion having a data connector electrically coupled with the data port of said handheld computer, said computer attachment portion having said handheld computer removably received thereon in an operative position wherein said data port of said handheld computer is electrically coupled to said data connector; and

a computer cover portion having a keyboard with a plurality of keys having indicia representative of alphabetic and/or numeric characters associated therewith, said keyboard being electrically coupled to said data connector on said computer attachment portion and being adapted to transmit a data signal to said computer processor via the electrical coupling of said data connector and said data port to thereby enable the user to input data into said computer processor;

said computer cover portion being movably connected to said computer attachment portion to enable said portions to be moved between (a) a computer protecting position wherein said cover portion is positioned in an overlying relationship with respect to the front side of the handheld computer and (b) a computer operating position wherein said cover portion is moved out of said overlying relationship to enable said user to view the display screen of said handheld computer and operate said keyboard to input data into said processor, said computer cover portion being sized and configured to cover at least the display screen on the front side of said handheld computer in said computer protecting position thereof to protect the display screen of said computer;

said keyboard being arranged with respect to said computer attachment portion such that upon relative movement of said cover and attachment portions into said computer operating position the indicia on said keyboard has the same general orientation from a user's perspective as characters displayed on the display screen of said handheld computer without requiring reorientation of said handheld computer relative to said keyboard to achieve said orientation.

19. A system according to claim **18**, wherein said computer attachment portion has a computer retainer releasably retaining said handheld computer in said operative position on said computer attachment portion.

20. A system according to claim **19**, wherein said computer cover portion is sized and configured to completely cover the front side of said handheld computer in said computer protecting position thereof to protect the front side of said computer.

21. A system according to claim **20**, wherein said computer attachment portion is pivotally connected to said cover portion.

22. A system according to claim **21**, wherein said computer attachment portion is sized and configured to completely covers a rear side of said handheld computer in said operative position thereof.

23. A system according to claim **22**, wherein said computer attachment portion and said computer cover portion each have an outer shell, said outer shells being configured such that, when said computer cover portion is in said computer protecting position thereof, the outer shells of said cover portion and said attachment portion cooperate to completely enclose said handheld computer.

24. A system according to claim **23**, wherein the outer shells of said computer attachment portion and said computer cover portion are each formed from a substantially rigid material.

25. A system according to claim **24**, wherein substantially rigid material is plastic.

26. A system according to claim **24**, wherein said computer attachment portion and said computer cover portion provide cooperating structures that cooperate with one another to releasably retain said computer cover portion in said computer protecting position thereof.

27. A system according to claim **26**, wherein said cooperating structures include a latch portion provided on one of said cover and attachment portions and a latch portion provided on the other of said cover and attachment portions, said latch portions being engageable with one another in a releasably interlocked relation to releasably retain said computer cover portion in said computer protecting position thereof, said latch portion being disengageable to release said computer cover portion for movement from said computer protecting position thereof.

28. A system according to claim **27**, wherein one of said latch portions is a latch hook and wherein the other of said latch portions is a hook receiving member with a hook receiving opening, said hook being receivable in said hook receiving opening to provide said interlocked relation and releasably retain said computer cover portion in said computer protecting position thereof, said hook being removable from said hook receiving opening to release said computer cover portion for movement from said computer protecting position thereof.

29. A system according to claim **23**, wherein the outer shells of said computer cover portion and said computer attachment portion are each made from a flexible material.

30. A system according to claim **18**, further comprising:

a keyboard processor electrically coupled to said keyboard and said keyboard processor being adapted to process the keystrokes applied to said keyboard by the user and transmit said data signal based on said keystrokes to said computer processor via the electrical coupling of said data connector and said data port to thereby enable the user to input data into said computer processor when said handheld computer is received on said computer attachment portion in said operative position thereof.

31. A system according to claim **30**, wherein said keyboard comprises a plurality of switches each electrically coupled to said keyboard processor and a plurality of individual keys each positioned adjacent an associated one of said switches such that manually depressing one of said keys moves the switch associated with the depressed key, each of said switches being adapted such that movement thereof signals said keyboard processor that the key associated therewith has been depressed.

32. A system according to claim **18**, wherein said data connector electrically couples to the data port of said handheld computer by an electro-conductive contact connection.

33. A system according to claim **32**, wherein said data connector is fixedly positioned on said computer attachment portion such that upon positioning said handheld computer in said operative position said electro-conductive contact connection is established.

34. A system according to claim **33**, wherein said data connector and said data port each comprises a plurality of metal prongs for establishing said electro-conductive contact connection.

35. A protective case for a handheld computer comprising: (a) an outer shell configured to be received in a user's

hand, (b) a computer processor housed within said outer shell for processing data, (c) a display screen facing outwardly from a front side of said outer shell, said display screen being electrically coupled to said computer processor to enable said processor to display information on said screen, and (d) a data port coupled to said computer processor, said data port being adapted to communicate data between said computer processor and a peripheral device, said protective case comprising:

a computer attachment portion having a data transmitter adapted to transfer data to the computer processor of the handheld computer through the data port of said handheld computer, said computer attachment portion being configured to removably receive said handheld computer thereon in an operative position with said data port of said handheld computer and said data transmitter enabling said data transmitter to transfer data to the computer processor through the data port,

a computer cover portion having a keyboard with a plurality of keys having indicia representative of alphabetic and/or numeric characters associated therewith, said keyboard being adapted to transmit a data signal to said computer processor via said data transmitter and the data port to thereby enable the user to input data into said computer processor when said handheld computer is received on said computer attachment portion in said operative position thereof;

said computer cover portion being movably connected to said computer attachment portion to enable said portions to be moved between (a) a computer protecting position wherein, when said handheld computer is in'said operative position on said computer attachment portion, said cover portion is positioned in an overlying relationship with respect to the front side of the handheld computer and (b) a computer operating position wherein, when said handheld computer is in said operative position on said computer attachment portion, said cover portion is moved out of said overlying relationship to enable said user to view the display screen of said handheld computer and operate said keyboard to input data into said processor, said computer cover portion being sized and configured to cover at least the display screen on the front side of said handheld computer in said computer protecting position thereof to protect the display screen of said computer;

said keyboard being arranged with respect to said computer attachment portion such that upon relative movement of said cover and attachment portions into said computer operating position the indicia on said keyboard has the same general orientation from a user's perspective as characters displayed on the display screen of said handheld computer without requiring reorientation of said handheld computer relative to said keyboard to achieve said orientation.

36. A protective case according to claim **35**, wherein said computer attachment portion has a computer retainer that releasably retains said handheld computer in said operative position on said computer attachment portion.

37. A protective case according to claim **36**, wherein said computer cover portion is sized and configured to completely cover the front side of said handheld computer in said computer protecting position thereof to protect the front side of said computer.

38. A protective case according to claim **37**, wherein said computer attachment portion is pivotally connected to said cover portion.

39. A protective case according to claim **38**, wherein said computer attachment portion is sized and configured to completely cover a rear side of said handheld computer in said operative position thereof.

40. A protective case according to claim **39**, wherein said computer attachment portion and said computer cover portion each have an outer shell, said outer shells being configured such that, when said handheld computer is in said operative position thereof and said computer cover portion is in said computer protecting position thereof, said outer shells cooperate to completely enclose said handheld computer.

41. A protective case according to claim **40**, wherein the outer shells of said computer attachment portion and said computer cover portion are each formed from a substantially rigid material.

42. A protective case according to claim **41**, wherein substantially rigid material is plastic.

43. A protective case according to claim **41**, wherein said computer attachment portion and said computer cover portion provide cooperating structures that cooperate with one another to releasably retain said computer cover portion in said computer protecting position thereof.

44. A protective case according to claim **43**, wherein said cooperating structures include a latch portion provided on one of said cover and attachment portions and a latch portion provided on the other of said cover and attachment portions, said latch portions being engageable with one another in a releasably interlocked relation to releasably retain said computer cover portion in said computer protecting position thereof, said latch portion being disengageable to release said computer cover portion for movement from said computer protecting position thereof.

45. A protective case according to claim **44**, wherein one of said latch portions is a latch hook and wherein the other of said latch portions is a hook receiving member with a hook receiving opening, said hook being receivable in said hook receiving opening to provide said interlocked relation and releasably retain said computer cover portion in said computer protecting position thereof, said hook being removable from said hook receiving opening to release said computer cover portion for movement from said computer protecting position thereof.

46. A protective case according to claim **40**, wherein said computer cover portion and said computer attachment portion are each made from a flexible material.

47. A protective case according to claim **35**, further comprising:

a keyboard processor electrically coupled to said keyboard and said keyboard processor being adapted to process the keystrokes applied to said keyboard by the user and transmit said data signal based on said keystrokes to said computer processor via the electrical coupling of said data connector and said data port to thereby enable the user to input data into said computer processor when said handheld computer is received on said computer attachment portion in said operative position thereof.

48. A protective case according to claim **47**, wherein said keyboard comprises a plurality of switches each electrically coupled to said keyboard processor and a plurality of individual keys each positioned adjacent an associated one of said switches such that manually depressing one of said keys moves the switch associated with the depressed key, each of said switches being adapted such that movement thereof signals said keyboard processor that the key associated therewith has been depressed.

49. A protective case according to claim **35**, wherein said keyboard is the only input device on said computer cover portion.

50. A protective case according to claim 35, wherein said data transmitter electrically couples to the data port of said handheld computer by an electro-conductive contact connection.

51. A protective case according to claim 50, wherein said data transmitter is fixedly positioned on said computer attachment portion such that upon positioning said handheld computer in said operative position said electro-conductive contact connection is established.

52. A protective case according to claim 51, wherein said data transmitter comprises a plurality of metal prongs for establishing said electro-conductive contact connection.

53. A handheld computer system comprising:

(A) a handheld computer comprising:

an outer shell configured to be received in a user's hand,

a computer processor housed within said outer shell for processing data,

a display screen facing outwardly from a front side of said outer shell, said display screen being electrically coupled to said processor to enable said processor to display information on said screen, and

a data port electrically coupled to said computer processor, said data port being adapted to communicate data between said computer processor and a peripheral device,

(B) a protective case comprising:

a computer attachment portion having a data transmitter adapted to transfer data to the computer processor of the handheld computer through the data port of said handheld computer, said computer attachment portion having said handheld computer removably received thereon in an operative position with said data port of said handheld computer and said data transmitter enabling said data transmitter to transfer data to the computer processor through the data port; and

a computer cover portion having a keyboard with a plurality of keys having indicia representative of alphabetic and/or numeric characters associated therewith, said keyboard being adapted to transmit a data signal to said computer processor via said data transmitter and the data port to thereby enable the user to input data into said computer processor;

said computer cover portion being movably connected to said computer attachment portion to enable said portions to be moved between (a) a computer protecting position wherein said cover portion is positioned in an overlying relationship with respect to the front side of the handheld computer and (b) a computer operating position wherein said cover portion is moved out of said overlying relationship to enable said user to view the display screen of said handheld computer and operate said keyboard to input data into said processor, said computer cover portion being sized and configured to cover at least the display screen on the front side of said handheld computer in said computer protecting position thereof to protect the display screen of said computer;

said keyboard being arranged with respect to said computer attachment portion such that upon relative movement of said cover and attachment portions into said computer operating position the indicia on said keyboard has the same general orientation from a user's perspective as characters displayed on the display screen of said handheld computer without requiring reorientation of said handheld computer relative to said keyboard to achieve said orientation.

54. A system according to claim 53, wherein said computer attachment portion has a computer retainer releasably retaining said handheld computer in said operative position on said computer attachment portion.

55. A system according to claim 54, wherein said computer cover portion is sized and configured to completely cover the front side of said handheld computer in said computer protecting position thereof to protect the front side of said computer.

56. A system according to claim 55, wherein said computer attachment portion is pivotally connected to said cover portion.

57. A system according to claim 56, wherein said computer attachment portion is sized and configured to completely covers a rear side of said handheld computer in said operative position thereof.

58. A system according to claim 57, wherein said computer attachment portion and said computer cover portion each have an outer shell, said outer shells being configured such that, when said computer cover portion is in said computer protecting position thereof, the outer shells of said cover portion and said attachment portion cooperate to completely enclose said handheld computer.

59. A system according to claim 58, wherein the outer shells of said computer attachment portion and said computer cover portion are each formed from a substantially rigid material.

60. A system according to claim 59, wherein substantially rigid material is plastic.

61. A system according to claim 59, wherein said computer attachment portion and said computer cover portion provide cooperating structures that cooperate with one another to releasably retain said computer cover portion in said computer protecting position thereof.

62. A system according to claim 61, wherein said cooperating structures include a latch portion provided on one of said cover and attachment portions and a latch portion provided on the other of said cover and attachment portions, said latch portions being engageable with one another in a releasably interlocked relation to releasably retain said computer cover portion in said computer protecting position thereof, said latch portion being disengageable to release said computer cover portion for movement from said computer protecting position thereof.

63. A system according to claim 62, wherein one of said latch portions is a latch hook and wherein the other of said latch portions is a hook receiving member with a hook receiving opening, said hook being receivable in said hook receiving opening to provide said interlocked relation and releasably retain said computer cover portion in said computer protecting position thereof, said hook being removable from said hook receiving opening to release said computer cover portion for movement from said computer protecting position thereof.

64. A system according to claim 58, wherein the outer shells of said computer cover portion and said computer attachment portion are each made from a flexible material.

65. A system according to claim 53, further comprising:

a keyboard processor electrically coupled to said keyboard and said keyboard processor being adapted to process the keystrokes applied to said keyboard by the user and transmit said data signal based on said keystrokes to said computer processor via the electrical coupling of said data connector and said data port to thereby enable the user to input data into said computer

processor when said handheld computer is received on said computer attachment portion in said operative position thereof.

66. A system according to claim **65**, wherein said keyboard comprises a plurality of switches each electrically coupled to said keyboard processor and a plurality of individual keys each positioned adjacent an associated one of said switches such that manually depressing one of said keys moves the switch associated with the depressed key, each of said switches being adapted such that movement thereof signals said keyboard processor that the key associated therewith has been depressed.

67. A system according to claim **53**, wherein said keyboard is the only input device on said computer cover portion.

68. A system according to claim **53**, wherein said data transmitter electrically couples to the data port of said handheld computer by an electro-conductive contact connection.

69. A system according to claim **68**, wherein said data transmitter is fixedly positioned on said computer attachment portion such that upon positioning said handheld computer in said operative position said electro-conductive contact connection is established.

70. A protective case according to claim **69**, wherein said data transmitter and said data port each comprise a plurality of metal prongs for establishing said electro-conductive contact connection.

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PROOF OF SERVICE

I hereby certify that two copies of the Appendix were deposited with the United States Postal Service on February 21, 2014, with sufficient postage as first class mail, in envelopes addressed to the following counsels as follows:

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